

subspecies of *M. lucida*. I would expect at least some geographically intermediate collections from the coastal cordillera near Caracas.

ADDITIONAL NOTES ON THE GENUS VERBENA. VII

Harold N. Moldenke

VERBENA [Dorst.] L.

Additional bibliography: Robin, Fl. Louis. 385. 1807; Raf., Fl. Ludovic., pr. 1, 39, 128, 139, & 155. 1817; H. Becker, Über Keimung Verschied. Früchte [thesis] 1—129. 1912; Wolden, Proc. Iowa Acad. Sci. 39: 122—123. 1934; G. E. Nichols, Ecology 15: 265. 1934; Goss, Calif. Dept. Agr. Bull. 26: 326—333. 1937; Anon., Seed Trade Buyers Guide 1937: 150—151. 1937; J. N. Martin, Proc. Iowa Acad. Sci. 50: 222, 224, & 227. 1943; F. M. & E. T. Turrell, Proc. Iowa Acad. Sci. 50: 185. 1943; Covas & Hunziker, Rev. Invest. Agr. Buenos Aires 8: 251—253. 1954; L. J. Bradley, Ferns & Flow. Pl. Audubon Cent. 67. 1955; Cave, Ind. Pl. Chromosome Numb. 1: 1 & 46 (1958), 1: Suppl. vii & 50 (1959), and 1: 48. 1960; Rahn, Bot. Tidssk. 56: 122. 1960; Solbrig, Madroño 15: 220. 1960; Cave, Ind. Pl. Chromosome Numb. 2: 63 & 136—137. 1961; Hellyer, Amat. Gard. Photo Album 184. 1961; M. A. Rau, Bull. Bot. Surv. India 3: 238. 1961; Deb, Bull. Bot. Surv. India 3: 315. 1961; Solbrig, Madroño 16: 267. 1962; Heit, Assoc. Offic. Seed Analysts Newsletter 37 (2): 17. 1963; Cave, Ind. Pl. Chromosome Numb. 2: 331. 1964; Almquist, Fl. Upsal. 213. 1965; Batten & Bokelmann, Wild Fls. East. Cape Prov. 125 & pl. 99 (9). 1966; Anon., Biol. Abstr. 48 (22): S.188. 1967; Raf., Fl. Ludovic., pr. 2, 39, 128, 139, & 155. 1967; L. V. Barton, Bibl. Seeds 313 & 813. 1967; Twisselmann, Wasmann Journ. Biol. 25: 327. 1967; Fulling, Ind. Bot. Record. Bot. Review 563. 1967; Moldenke, Phytologia 16: 87—106. 1968; Breck, Better Gardens 18. 1968.

Although the Wolden (1934) reference in the bibliography above is dated "1932", according to the late Dr. J. H. Barnhart the actual date of publication was probably 1934.

VERBENA ABRAMSI Moldenke

Additional bibliography: Twisselmann, Wasmann Journ. Biol. 25: 327. 1967; Moldenke, Phytologia 15: 484 (1968) and 16: 96. 1968.

Twisselmann (1967) states that this species is common in Douglas oak woodland in the Greenhorn Range, but rare in vernal poolbeds in northern Temblor Range in Kern County, California. He gives "*V. lasiostachys* in part" as a synonym.

VERBENA AMBROSIFOLIA f. EGLANDULOSA Perry

Additional bibliography: Moldenke, Phytologia 15: 484—486. 1968.

Additional citations: MEXICO: Chihuahua: Moldenke & Moldenke 2095 (Z--photo).

VERBENA BANGIANA Moldenke

Additional bibliography: Moldenke, *Phytologia* 15: 485--486 (1968) and 16: 98. 1968.

VERBENA BIPINNATIFIDA Nutt.

Additional bibliography: Cave, *Ind. Pl. Chromosome Numb.* 2: 136. 1961; Solbrig, *Madroflo* 16: 267. 1962; Cave, *Ind. Pl. Chromosome Numb.* 2: 216. 1963; Moldenke, *Phytologia* 16: 87. 1968.

Cave (1961, 1963) reports the haploid number of chromosomes for this species as 15.

Additional citations: ARIZONA: Cochise Co.: Moldenke & Moldenke 2052 (Z--photo).

VERBENA BONARIENSIS L.

Additional bibliography: Bonstedt, *Pareys Blumengärtn.*, ed. 1, 2: 273. 1932; Maatsch in Encke, *Pareys Blumengärtn.*, ed. 2, 2: 439--441. 1960; Hellyer, *Amat. Gard. Photo Album* 184. 1961; Rickett, *Wild Fls. U. S.* 2 (2): 462, 463, & 685, pl. 170. 1967; Moldenke, *Phytologia* 15: 486--488 (1968) and 16: 98. 1968.

Additional illustrations: Hellyer, *Amat. Gard. Photo Album* 184. 1961; Rickett, *Wild Fls. U. S.* 2 (2): pl. 170 [in color]. 1967.

Bonstedt (1932) lists Verbena capensis Thunb. as a synonymy of V. bonariensis, but it actually belongs in the synonymy of Lippia javanica (Burm. f.) Spreng. He records the German popular name, "bonarisches Eisenkraut", for V. bonariensis. The V. bonariensis var. gracilis Cham. which he lists is actually V. intermedia Gill. & Hook., as are also the V. tenuis Steud. and V. chamissonis Walp. which he includes as synonyms.

Maatsch (1960) states that V. bonariensis was introduced into cultivation in 1737 and gives the following cultural directions: "Verwendung dieser Art als einjährige Sommerblume in grösseren Gärten und Anlagen in bunten Pflanzungen oder auch auf Staudenrabatten als LÖCKERFÜLLER. Anzucht durch Aussaat unter Glas im März, Vorkultur pikiert oder in kleinen Torftöpfen, im Mai im Kasten abhärten und aufpflanzen. Aussaat im Kasten im April ist auch möglich, verzögert aber den Beginn der Blüte."

Hellyer (1961) notes that in gardens this species is short-lived, but re-sows itself abundantly.

VERBENA BRACTEATA Lag. & Rodr.

Additional bibliography: Wolden, *Proc. Iowa Acad. Sci.* 39: 122--123. 1934; Solbrig, *Madroflo* 15: 50 (1959) and 15: 220. 1960; Cave, *Ind. Pl. Chromosome Numb.* 1: 48 (1960) and 2: 63 & 79. 1961; Almquist, *Fl. Upsal.* 213. 1965; Twisselmann, *Wasmann Journ. Biol.* 25: 327. 1967; Moldenke, *Phytologia* 16: 87. 1968.

Cave (1960) reports the haploid number of chromosomes in this species as 7 and 14. Wolden (1934) notes that "specimens collected on river bank at Estherville [Emmet County, Iowa] resemble

V. officinalis somewhat, but are probably hybrids between V. urticaefolia and V. bracteosa." This reference appears to be dated "1932", but the late Dr. J. H. Barnhart concluded after some research that it was not actually published until 1934.

Twisselmann (1967) tells us that V. bracteata is "common in wet soil on desiccating flats and in vernal poolbeds in [the] valley [of Kern County, California] and in Temblar Range, occasional around Lake Isabella, abundant in wet soil and shallow water of Kern National Wildlife Refuge."

VERBENA BRASILIENSIS Vell.

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 136. 1961; Moldenke, Phytologia 16: 87 & 98. 1968.

Cave (1961) reports the haploid number of chromosomes in this species as 14 and the diploid number as 28.

VERBENA CALLIANTHA Briq.

Additional bibliography: Moldenke, Phytologia 15: 491. 1968.

Krapovickas thinks that this taxon is a natural hybrid between Verbena incisa Hook. and V. tenuisecta Briq. on the basis of his collection number 13085 which he regards as a hybrid between his no. 13087 (which he identified as Glandularia peruviana) and his no. 13080. This interspecific hybrid has hitherto been regarded by me as xV. trinitensis Moldenke. More study is required here.

Additional citations: ARGENTINA: Formosa: Krapovickas 13085 (Rf).

VERBENA CAMERONENSIS L. I. Davis

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Moldenke, Phytologia 15: 491. 1968.

Cave (1961) reports the haploid chromosome number for this species as 15.

VERBENA CANADENSIS (L.) Britton

Additional bibliography: Raf., Fl. Ludovic., pr. 1, 139. 1817; Solbrig, Madroño 15: 51. 1959; Cave, Ind. Pl. Chromosome Numb. 1: 48 (1960) and 2: 331. 1964; Raf., Fl. Ludovic., pr. 2, 139. 1967; Moldenke, Phytologia 16: 87-88. 1968.

Rafinesque (1817) says "Verbena anonyma Bartr. trav. p. 136. Found by Bartram near Pointe Coupée: he says, that it is a beautiful species, with decumbent branches and lacerated deep green leaves, the branches bear corymbs of violet blue flowers. It grows in fields, in good soil, and blossoms in Autumn."

Cave (1960) gives the haploid chromosome number of this species as 15, but later (1964) as 10. Sharma & Mukhopadhyay (1963) refer to the corolla color as "red".

Additional citations: KANSAS: Douglas Co.: A. R. Moldenke 1429 (Z-photo).

VERBENA CANESCENS H.B.K.

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2:

137. 1961; Moldenke, *Phytologia* 16: 88 & 103. 1968.

McVaugh found this plant abundant on limestone with Ceanothus, Ephedra, and Mimosa. The corolla was "purple" on R. McVaugh 23700.

The Hess & Hall 647, distributed as V. canescens, is actually var. roemeriana (Scheele) Perry.

Additional citations: MEXICO: Aguascalientes: R. McVaugh 23700 (Mi).

VERBENA CANESCENS var. ROEMERIANA (Scheele) Perry

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Moldenke, *Phytologia* 15: 493 & 494 (1968) and 16: 103. 1968.

Cave (1961) reports the haploid chromosome number for this variety as 7 and the diploid number as 14. The corolla is described as "purple" on Hess & Hall 647 and these collectors call special attention to the fact that the bracts are "longer than the calyx".

Additional citations: MEXICO: Chihuahua: Moldenke & Moldenke 2097a (Z--photo, Z--photo). Nuevo León: Hess & Hall 647 (Mi).

VERBENA CAROLINA L.

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Moldenke, *Phytologia* 16: 88. 1968.

Cave (1961) reports the haploid chromosome number for this species as 7 and the diploid number as 14.

VERBENA CILIATA Benth.

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Moldenke, *Phytologia* 16: 88. 1968.

Cave (1961) reports the haploid chromosome number for this species as 7 and the diploid number as 14.

VERBENA CLOVERAE Moldenke

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Moldenke, *Phytologia* 16: 89. 1968.

Cave (1961) reports the haploid chromosome number for this species as 15.

VERBENA CRITHMIFOLIA Gill. & Hook.

Additional bibliography: Fulling, Ind. Bot. Record. Bot. Review 563. 1967; Moldenke, *Phytologia* 16: 50. 1968.

VERBENA DELTICOLA Small

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Moldenke, *Phytologia* 16: 89. 1968.

Cave (1961) reports the haploid chromosome number for this species as 7.

VERBENA EHRENBERGIANA Schau.

Additional bibliography: Cave, Pl. Ind. Chromosome Numb. 2:

137. 1961; Moldenke, *Phytologia* 16: 51. 1968.

Cave (1961) reports the haploid chromosome number for this species as 15.

VERBENA ELEGANS H.B.K.

Additional bibliography: Cave, *Ind. Pl. Chromosome Numb.* 2: 137. 1961; Moldenke, *Phytologia* 15: 492 & 493 (1968) and 16: 51--52. 1968.

Cave (1961) reports the haploid chromosome number for this species as 15 and the diploid number as 30.

VERBENA GOODINGII Briq.

Additional bibliography: Cave, *Ind. Pl. Chromosome Numb.* 1: 48 (1960) and 2: 137. 1961; Moldenke, *Phytologia* 15: 486 (1968) and 16: 53--55. 1968.

Cave (1960) reports the haploid chromosome number for this species as 10.

VERBENA GOODINGII var. NEPETIFOLIA Tidestr.

Additional bibliography: Cave, *Ind. Pl. Chromosome Numb.* 2: 137. 1961; Moldenke, *Phytologia* 16: 54--55. 1968.

Cave (1961) reports the haploid chromosome number for this variety as 15.

VERBENA HALEI Small

Additional bibliography: Cave, *Ind. Pl. Chromosome Numb.* 2: 137. 1961; Moldenke, *Phytologia* 16: 89. 1968.

Cave (1961) reports the haploid chromosome number for this species as 7 and the diploid number as 14.

VERBENA HASTATA L.

Additional & emended bibliography: Wolden, *Proc. Iowa Acad. Sci.* 39: 122. 1934; J. N. Martin, *Proc. Iowa Acad. Sci.* 50: 222, 224, & 227. 1943; L. J. Bradley, *Ferns & Flow. Pl. Audubon Cent.* 67. 1955; Solbrig, *Madroño* 15: 220. 1960; Cave, *Ind. Pl. Chromosome Numb.* 2: 63, 81, & 137. 1961; Mulligan, *Canad. Journ. Bot.* 39: 1061. 1961; Moldenke, *Phytologia* 16: 89--91. 1968.

Cave (1961) reports the haploid chromosome number for this species as 7 and the diploid number as 14.

Although the Wolden (1934) reference in the bibliography above is dated "1932", the late Dr. J. H. Barnhart has concluded that it was not actually published until 1934.

Martin (1943) informs us that seeds of the species under discussion stored at 14° (dry) showed no germination, but wet at the same temperature showed up to 25 percent germination; stored dry in the laboratory or wet outdoors they showed to 12 percent germination, but dry outdoors no germination at all.

xVERBENA HYBRIDA Voss

Additional synonymy: Verbena hybrida Voss ex Cave, *Ind. Pl. Chromosome Numb.* 1: i & 46, sphalm. 1958.

Additional bibliography: Cave, *Ind. Pl. Chromosome Numb.* 1: i

& 46. 1958; Hellyer, Amat. Gard. Photo Album 184. 1961; Fulling, Ind. Bot. Record. Bot. Review 563. 1967; Moldenke, Phytologia 16: 92--94. 1968; Breck, Better Gardens 18. 1968.

Additional illustrations: Breck, Better Gardens 18 [in color]. 1968.

Cave (1958) reports the haploid chromosome number for this hybrid as 5. Hellyer (1961) lists a lavender-flowered cultivar called "Loveliness", a carmine "Lawrence Johnson", and a brilliant red "Firefly". Breck lists (1968) an "Amethyst Verbena" and describes it as 6 inches tall, slightly open-faced, with mid-blue flowers sparkling in twinkling profusion above cushions of foliage; compact habit, with 10--15-inch spread, strong-growing, drought-resisting, and annual, blooming all summer.

VERBENA INCISA Hook.

Additional bibliography: Moldenke, Phytologia 16: 93--95 & 185. 1968.

Krapovickas believes that V. calliantha Briq. represents the natural hybrid between this species and V. tenuisecta Briq. (cfr. xV. trinitensis Moldenke).

Additional citations: ARGENTINA: Formosa: Krapovickas 13087 (Rf).

VERBENA INTEGRIFOLIA Sessé & Moc.

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Moldenke, Phytologia 16: 95. 1968.

Cave (1961) reports the haploid chromosome number for this species as 21.

VERBENA LACINIATA (L.) Briq.

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 1: Suppl. vii & 50 (1959) and 2: 331. 1964; Moldenke, Phytologia 16: 95--96. 1968.

Cave (1959) reports the haploid chromosome number for this species as 5 and (1964) the diploid number as 10.

VERBENA LASIOSTACHYS Link

Additional bibliography: Solbrig, Madroffo 15: 50. 1959; Cave, Ind. Pl. Chromosome Numb. 1: 48. 1960; Twisselmann, Wasmann Journ. Biol. 25: 98 & 327. 1967; Moldenke, Phytologia 16: 96--97 & 183. 1968.

Cave (1960) reports the haploid chromosome number for this species as 7. Twisselmann (1967) records the species from Kern County, California, and says "common in Douglas oak woodland in [the] Greenhorn Range, occasional through mountains south to Mil Potrerros in [the] San Emigdio Range", but I suspect that he is referring here to var. septentrionalis Moldenke.

VERBENA MACDOUGALII Heller

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Moldenke, Phytologia 16: 99. 1968.

Cave (1961) reports the haploid chromosome number for this

species as 7.

VERBENA MEGAPOTAMICA Spreng.

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 1: Suppl. vii & 50. 1959; Moldenke, Phytologia 16: 100. 1968.

Cave (1959) reports the haploid chromosome number for this species as 5.

VERBENA MENDOCINA R. A. Phil.

Additional bibliography: Fulling, Ind. Bot. Record. Bot. Review 563. 1967; Moldenke, Phytologia 16: 100. 1968.

VERBENA NEOMEXICANA (A. Gray) Small

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Moldenke, Phytologia 16: 98 & 102-103. 1968.

VERBENA NEOMEXICANA var. HIRTELLA Perry

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Moldenke, Phytologia 16: 102 & 103. 1968.

Cave (1961) reports the haploid chromosome number for this variety as 7.

VERBENA OFFICINALIS L.

Additional bibliography: M. A. Rau, Bull. Bot. Surv. India 3: 238. 1961; Deb, Bull. Bot. Surv. India 3: 315. 1961; Moldenke, Phytologia 16: 103-106 & 185. 1968.

Prior (1863) states that the common name for this plant, "simpler's joy", in England is in allusion to the "good sale they had for so highly esteemed a plant". Additional common names recorded for the plant in England are "countryman's treacle" [also applied to Ruta graveolens L.], "tears-of-Isis", and "tears-of-Juno".

Maheshwari (1963) describes this species as it grows in India as "An erect or decumbent, branching herb, 30-100 cm. tall. Young branches with minute, sparse prickles. Leaves 5-10 x 1.5-2.5 cm., variously lobed, scabrous; lower ones pinnatifid or coarsely toothed; upper ones usually deep dentate or tripartite. Flowers pale pink, in dense, bracteate spikes. Pyrenes dry, subcylindric, smooth. Common along canal banks, near temporary puddles and stagnant water channels. Flowers and Fruits: April-Oct." He cites Maheshwari 429 from Delhi. Banerji (1965) cites his collection no. 1069.

Karrer (1958) reports that up to 2 percent of stachyose, $C_{24}H_{42}O_{21}$, has been extracted from the roots of this plant. This substance, however, has been found also in such diverse plants as Catalpa bignonioides, Cicer arietinum, Clinopodium vulgare, Corylus avellana, C. colurna, Galega officinalis, Jasminum officinale, Lamium album, Leucaena glauca, Lithospermum purpureo-caeruleum, Lupinus luteus, Mentha silvestris, Origanum vulgare, Phaseolus vulgaris, Pinus thunbergii, Plantago carinata, P. maritima, Scrophularia nodosa, S. sambucifolia, Stachys tuberifera, Teucrium

canadense, Trifolium incarnatum, and Trigonella foenum-graecum. He also reports the presence of verbenalin, $C_{17}H_{24}O_{10}$, in Verbena officinalis.

Chopta, Badhwar, & Ghosh (1965) record the additional vernacular names "rai-el-hamam" [Arabic], "gasmashang" [Persian], "karaita" and "pamukh" [Punjab], and "faristarium" [Urdu]. They say of the plant: "It is found as a weed on waste lands and in gardens in the plains of the Punjab and Bengal (occasionally in Bihar also) rising up to an altitude of 7,000 ft. in the Himalayas from Kashmir eastwards.....The fresh leaves are used in the Punjab as a febrifuge, tonic, and as a rubifacient in rheumatism and other diseases of the joints. The root is believed to be a remedy for scrofula and snake bite. Overseas, the plant is stated to be used as a popular medicine in the treatment of fevers, colds, nervous disorders, pleurisy and dropsy. According to Pammel, the herb is an irritant poison....The entire plant, twigs, leaves and flowers has yielded a crystalline glucoside verbanalin (cornin) to the extent of 0.244 per cent...In addition it contains another glucoside verbenin....Holste...found that verbanalin produces a stimulation of the motor activities of the central nervous system in frogs, followed in large doses by stupor, clonic and tetanic convulsions and finally paralysis. In mammals it produces little effect apart from the stimulation of the uterus, and increased tonus and a strengthening of the contractions of this organ. According to Kuwazima....verbanin in frogs acts upon the sympathetic nerve endings of the epidermal mucous glands and of the heart and vessels, and uterus and salivary glands; in mammals it produces a marked and prolonged secretion of milk."

Deb (1961) refers to this plant as an "undershrub" and says that it is abundant in the Manipur valley, citing his collection numbers 211 & 754, ascending to 1350 meters there. Rau (1961) cites his no. 10055 from Uttar Pradesh, India.

The Boissier (1879) reference in the bibliography of this species is sometimes cited as "1875", but the page involved was not issued until 1879. The H.B.K. references in the bibliography have been authenticated as to date by consultation of the work of Barnhart (1902) on this subject.

The DeWolf 743 and Edw. Palmer 1043, distributed as V. officinalis, are actually V. halei Small, while the Gauba 903 collection cited below is a mixture with Plumbago sp.

Additional citations: CONNECTICUT: New Haven Co.: Oakes s.n. (Ms--3201). NEW YORK: Bronx Co.: A. Brown s.n. [Hunter's Point, Aug. 10, 1879] (Ms--79258). NEW JERSEY: Hudson Co.: A. Brown s.n. [Jersey City, Sept. 11, '78] (Ms--78114). PENNSYLVANIA: Philadelphia Co.: E. Durand s.n. [near Philad.] (Ms--30803). VIRGINIA: Bedford Co.: Curtiss s.n. [July 1, 1870] (Ms--30801). Smyth Co.: J. K. Small s.n. [July 6, 1892] (Ms--30800). NORTH CAROLINA: County undetermined: LeRoy s.n. [June '72] (Ms--30805). COLOMBIA: Valle del Cauca: Holton 504 (Ms--30799). GREAT BRITAIN: England:

Raven & Cannon 16432 (Du--475086); J. Ray s.n. [Epping, 27-7-40] (Ms--30806). GERMANY: Degener & Degener 23405 (Ms--43960); Herb. F. J. Young K.664 (Ws); Wunderly s.n. (Ws). SWITZERLAND: Thomas s.n. (Ms--30797). IRAN: Gauba 903, in part (B). CHINA: Szechuan: Fang 1680 (Du--336014), 5201 (Du--333776). THAILAND: Larsen, Smitinand, & Warncke 1021 (Ac, Rf). LOCALITY OF COLLECTION UNDETERMINED: Herb. Amherst Coll. s.n. (Ms--30798).

xVERBENA OKLAHOMENSIS Moldenke

Additional bibliography: Moldenke, Phytologia 10: 282--284. 1964; Hocking, Excerpt. Bot. A.10: 270. 1966.

VERBENA ORCUTTIANA Perry

Additional bibliography: Moldenke, Phytologia 11: 475. 1965; Hocking, Excerpt. Bot. A.10: 270. 1966.

VERBENA ORIGENES R. A. Phil.

Additional bibliography: Hocking, Excerpt. Bot. A.10: 270. 1966; Moldenke, Phytologia 13: 213. 1966; Moldenke, Résumé Suppl. 15: 5. 1967.

The Herb. Mus. Nac. Hist. Nat. Santiago 6 and Werdermann 959 cited by me as typical V. origenes in a previous installment of these notes are actually var. glabriflora Moldenke.

VERBENA ORIGENES var. GLABRIFLORA Moldenke, Résumé Suppl. 15: 5, nom. nud. (1967), var. nov.

Haec varietas a forma typica speciei corollis extus glabris recedit.

This variety differs from the typical form of the species in having the outer surface of the corolla glabrous.

The type of the variety was collected by Otto Zöllner (no. 1238) on dry slopes of the valleys at Monturaqui, at an altitude of 3600 meters, Antofagasta, Chile, on January 18, 1967, and is deposited in my personal herbarium at Plainfield, New Jersey. The collector notes that the plant was "abundant" at the type locality. The variety has also been found at 3800 meters altitude in Atacama.

Citations: CHILE: Antofagasta: Zöllner 1238 (Z--type). Atacama: Werdermann 959 (N). Province undetermined: Herb. Mus. Nac. Hist. Nat. Santiago 6 (N).

VERBENA OVATA Cham.

Additional bibliography: Hocking, Excerpt. Bot. A.10: 270. 1966; Moldenke, Phytologia 14: 292. 1967.

VERBENA PARODII (Covas & Schnack) Moldenke

Additional bibliography: Anon., U. S. Dept. Agr. Bot. Subj. Ind. 15: 14360. 1958; Hocking, Excerpt. Bot. A.10: 270. 1966; Moldenke, Phytologia 14: 292. 1967.

VERBENA PARVULA Hayek

Additional bibliography: Moldenke, *Phytologia* 14: 288, 292—293, & 301. 1967; Moldenke, *Résumé Suppl.* 15: 3 & 5. 1967.

VERBENA PAULSENI R. A. Phil.

Additional bibliography: Moldenke, *Phytologia* 11: 476. 1965; Moldenke, *Résumé Suppl.* 15: 5. 1967.

Additional citations: CHILE: Coquimbo: Zöllner 1489 (Z).

VERBENA PERAKII (Covas & Schnack) Moldenke

Additional synonymy: Glandularia perackii Covas & Schnack ex Solbrig, *Madroffo* 15: 50, sphalm. 1959.

Additional bibliography: Anon., U. S. Dept. Agr. Bot. Subj. Ind. 15: 14360. 1958; Solbrig, *Madroffo* 15: 50. 1959; Cave, Ind. Pl. Chromosome Numb. 1: 48. 1960; Hocking, *Excerpt. Bot. A.10*: 270. 1966; Moldenke, *Phytologia* 14: 293. 1967.

Cave (1960) reports the haploid chromosome number for this species as 5.

VERBENA PERENNIS Wooton

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Solbrig, *Madroffo* 16: 267. 1962; Cave, Ind. Pl. Chromosome Numb. 2: 216. 1963; Moldenke, *Phytologia* 13: 253. 1966; Hocking, *Excerpt. Bot. A.10*: 270. 1966.

Weber & Cronquist found this plant growing on a gravelly hill-top in New Mexico. Cave (1961, 1963) reports the haploid chromosome number for this species as 7.

Additional citations: NEW MEXICO: Eddy Co.: Weber & Cronquist 11477 (Du—498715). Lincoln Co.: Wooton 187 (Ms—30807—isotype). Sierra Co.: O. B. Metcalfe 1568 (Ms—33492, Ws).

VERBENA PERENNIS var. JOHNSTONI Moldenke

Additional bibliography: Moldenke, *Phytologia* 13: 214. 1966; Hocking, *Excerpt. Bot. A.10*: 270. 1966.

xVERBENA PERRIANA Moldenke

Additional & emended bibliography: Wolden, *Proc. Iowa Acad. Sci.* 39: 122—123. 1934; Hocking, *Excerpt. Bot. A.10*: 270. 1966; Gaiser & Moore, *Surv. Vasc. Pl. Lambton Co.* 100—101. 1966; Boivin, *Naturaliste Can.* 93: 429. 1966; Moldenke, *Phytologia* 13: 253 (1966) and 16: 51. 1968.

Wolden (1934) notes under V. bracteata that "specimens collected on river bank at Estherville [Emmet County, Iowa] resemble V. officinalis somewhat, but are probably hybrids between V. urticaefolia and V. bracteosa". This reference appears to be dated "1932" but according to notes left by the late Dr. J. H. Barnhart was probably not actually published until 1934.

Additional citations: MINNESOTA: Ramsey Co.: A. Brown s.n. [Fort Snelling, Aug. '93] (Ms—30771). MISSOURI: Saint Louis: Egbert s.n. [DeHodiamont Av., 4 August 1875] (Ms—30837).

xVERBENA PERTURBATA Moldenke

Additional bibliography: Moldenke, Phytologia 13: 215. 1966; Hocking, Excerpt. Bot. A.10: 270. 1966.

VERBENA PERUVIANA (L.) Britton

Additional synonymy: Verbena chamaedryfolia var. melindres Gill. ex Bonstedt, Pareys Blumengärtn., ed. 1, 273. 1932. Verbena chamaedryfolia var. melindroides Cham. ex Bonstedt, Pareys Blumengärtn., ed. 1, 273. 1932. Verbena chamaedryfolia var. latifolia Hort. ex Bonstedt, Pareys Blumengärtn., ed. 1, 273, in syn. 1932. Verbena peruviana cv. "Melindres" Maatsch in Encke, Pareys Blumengärtn., ed. 2, 441. 1960. Verbena peruviana cv. "Melindroides" Maatsch in Encke, Pareys Blumengärtn., ed. 2, 441. 1960.

Additional & emended bibliography: Hieron., Bol. Acad. Nac. Cienc. Córdoba 4: 404. 1881; Lorentz & Niederlein, Bot. Exped. Rio Negro 263. 1881; Duthie, Fl. Upper Gang. Plain 2: 218. 1911; Haines, Bot. Bihar & Orissa 4: 707. 1922; Gamble, Fl. Presid. Madras 6: 1106. 1924; L. H. Bailey, Man. Cult. Pl., ed. 1, pr. 1, 628, 629, & 848 (1924), pr. 2, 628, 629, & 848. 1925; H. C. Comber, Gard. Chron., ser. 3, 92: 373. 1932; Bonstedt, Pareys Blumengärtn., ed. 1, 273. 1932; Anon., Ind. Sem. Ofr. Canje Jard. Bot. Montev. 8. 1935; Sampaio, Bol. Mus. Nac. Rio Jan. 13: 190, 249, & 292. 1937; L. H. Bailey, Man. Cult. Pl., ed. 1, pr. 3, 628, 629, & 848 (1938), pr. 4, 628, 629, & 848 (1944), and ed. 2, 840, 841, & 1113. 1949; Cave, Ind. Pl. Chromosome Numb. 1: Suppl. vii & 50. 1959; Maatsch in Encke, Pareys Blumengärtn., ed. 2, 2: 440 & 441. 1960; Chopra, Badhwar, & Ghosh, Poison. Pl. India 2: 694. 1965; Hocking, Excerpt. Bot. A.10: 270. 1966; J. F. Williamson, Sunset West. Gard. Book, new ed., 437. 1967; Zukowski, Fl. Polska 11: 65. 1967; Moldenke, Phytologia 14: 293 (1967) and 16: 89, 93, 94, & 188. 1968.

Williamson (1967) says of this plant: "perennial, often grown as annual, available in several colors" and lists the horticultural varieties "Appleblossom", "Cherry Pink", and "Princess Gloria", all with salmon tones to the corollas, and comments that there are many other varieties in purplish and red and in white, especially popular in southern California gardens and in desert areas. Obviously he is here referring in toto to xV. hybrida Voss and not to V. peruviana! It also seems most probable that the plants referred to by Duthie (1911), Haines (1922), and Gamble (1924) is xV. hybrida. Zukowski (1967) records "V. chamaedryfolia Juss." as both cultivated and escaped in Poland, but it is also very possible that xV. hybrida is here being referred to.

Bonstedt (1932) records the German common name "germanderblättrigeres Eisenkraut" for V. peruviana. Maatsch (1960) cites as illustrations "B. M. 3333; B. C. 3: 3445, beide als V. chamaedryfolia; Chittenden, Dict. 4: 2212", and continues: "Diese Art ist die älteste Stammform unserer Gartenverbena. cv. 'Melindres'. Blätter länglich oder länglich-lanzettlich, ungleich eingeschnit-

ten gesägt, weniger stark kurz-rauhhaarig. — B. R. 1148. cv. 'Melindroides'. Blätter eiförmig, ziemlich gleichmässig oder doppelt-gekerbt-gesägt, stärker kurz-rauhhaarig. (K) Verwendung wie die aus ihr hervorgegangenen Hybriden. Kultur, wie bei V. bonariensis angegeben, durch Aussaat oder auch durch Stecklinge."

Cave (1959) reports the haploid chromosome number for this species as 7.

The Monetti s.n. [Herb. Inst. Miguel Lillo 31354] and Woolston 731, distributed as V. peruviana, are actually V. incisa Hook.

Additional citations: BRAZIL: Rio Grande do Sul: Rambo 42606 (B), 48727 (B), 51348 (B). URUGUAY: Herb. Herter 32160 (Ws); Herter 19b [Herb. Herter 71313] (Ws).

VERBENA PHLOGIFLORA Cham.

Additional synonymy: Verbena phlogifolia Regel ex Bonstedt, Pareys Blumengärtn., ed. 1, 2: 274, in syn. 1932. Ververna phlogiflora Cham., in herb.

Additional bibliography: L. H. Bailey, Man. Cult. Pl., ed. 1, pr. 1, 628, 629, & 849 (1924) and pr. 2, 628, 629, & 849. 1925; Bonstedt, Pareys Blumengärtn., ed. 1, 2: 274 & 275. 1932; Tu, Chinese Bot. Dict., abrdg. ed., 718. 1933; L. H. Bailey, Man. Cult. Pl., ed. 1, pr. 3, 628, 629, & 849 (1938) and pr. 4, 628, 629, & 849. 1944; Maatsch in Encke, Pareys Blumengärtn., ed. 2, 2: 440 & 441. 1960; Behm, Fl. Um Uns 51 & 287. 1966; Moldenke, Phytologia 14: 293 (1967) and 16: 89, 93, 94, & 100. 1968.

Bonstedt (1932) records the German popular name "phloxblütiges Eisenkraut" for this species. Maatsch (1960) describes the taxon as follows: "Barsilien, Paraguay, Uruguay, Argentinien. Sommer—Herbst. Staudig-halbstrauchig, der vorigen Art ähnlich; Wuchs kräftiger, Stengel aufstrebend. Äste kreuzgegenständig, vierkantig, mit nach abwärts gerichteter Behaarung. Blätter breiter, meist deutlich gestielt, aus keilförmigem, ganzrandigem Grunde länglich- oder lanzettlich-dreieckig, spitz, am Rande fast umgerollt, ungleich-eingeschnitten-gesägt, runzeladerig, stielgelhaarig. Blüten in endständigen, einzeln oder zu dritt stehenden oder trugdoldig-rispigen Blütenständen, grösser als bei V. peruviana. Deckblätter halb so lang wie der drüsige und behaarte Kelch, leuchtend purpurn, lila, rot oder blau. — 1834. B. M. 3541; B. C. 4: 3445. Auch diese Art ist an der Entwicklung des Sortimentes der Gartenverbena beteiligt; eine Kreuzung mit V. peruviana ergab die scharlachrote 'Défiance'. (K) Verwendung für bunte Beete, auch als Topfpflanze im Kalthaus. Anzucht durch Samen wie bei V. bonariensis oder auch durch Stecklinge."

The Rambo, Herb. Anchieta 49084, distributed as V. phlogiflora and so cited by Rambo (1965), is actually V. pulchra Moldenke, while 53369 is V. peruviana (L.) Britton.

Additional citations: BRAZIL: Paraná: Hatschbach 14769 (Rf), 14967 (Ac). Rio Grande do Sul: Rambo, Herb. Anchieta 59244 (B), s.n. [3.11.1954] (B). ARGENTINA: Corrientes: Ruiz Huidobro 4408

(Ms--34321).

VERBENA PINETORUM Moldenke

Additional bibliography: Moldenke, *Phytologia* 13: 216. 1966.

West describes this plant as an annual herb, growing along roadsides and in woods, blooming in June. The corollas on R. C. West D.2 are described as "violet", while those on R. C. West D.2 were "purple".

Additional citations: MEXICO: Hidalgo: R. C. West A.1 (Z), D.2 (Ws).

VERBENA PLATENSIS Spreng.

Additional bibliography: Hieron., *Bol. Acad. Nac. Cienc. Córdoba* 4: 404--405 & 408. 1881; Lorentz & Niederlein, *Bot. Exped. Rio Negro* 263--264. 1881; L. H. Bailey, *Man. Cult. Pl.*, ed. 1, pr. 1, 628, 629, & 849 (1924), pr. 2, 628, 629, & 849. 1925; Bonstedt, *Pareys Blumengärtn.*, ed. 1, 2: 274--275. 1932; L. H. Bailey, *Man. Cult. Pl.*, ed. 1, pr. 3, 628, 629, & 849 (1938) and pr. 4, 628, 629, & 849. 1944; Maatsch in Encke, *Pareys Blumengärtn.*, ed. 2, 2: 440 & 441. 1960; Behm, *Fl. Um Uns* 51 & 287. 1966; Moldenke, *Phytologia* 14: 293--294 (1967) and 16: 93. 1968.

Bonstedt (1932) records the German popular name, "gamander-Eisenkraut", for this species. He and Maatsch (1960) maintain that this species crossed with V. phlogiflora Cham. has yielded the "aurikelblüttigen Verbenen" [V. hybrida var. auriculiflora Hort., etc.], which I regard as typical xV. hybrida Voss. Maatsch comments as follows: "Aus Kreuzungen dieser Art mit V. phlogiflora entstanden die grossblüttigen Kulturformen, deren Blüten in der Mitte ein grosses, weisses Auge besitzen. Sie wurden als 'aurikelblütige' Verbenen in den Handel gebracht, werden aber heute in den Katalogen nicht mehr gesondert geführt. (K) Verwendung und Kultur wie V. x hybrida."

The Herb. Univ. Wisc. s.n., distributed as V. platensis, is actually Lantana montevidensis (Spreng.) Briq.

VERBENA PLATENSIS var. STENODES Briq.

Additional bibliography: Moldenke, *Phytologia* 11: 9--10. 1964.

Additional citations: ARGENTINA: Catamarca: Rodriguez Vaquero 899 (Ms--34322). Córdoba: Hieronymus s.n. [Bei San Antonio, 6.I. 1876] (B); Meyer & Sleumer 15654 (B).

VERBENA PLICATA Greene

Additional bibliography: Solbrig, *Madroffo* 16: 267. 1962; Cave, *Ind. Pl. Chromosome Numb.* 2: 137 (1961) and 2: 216. 1963; Moldenke, *Phytologia* 14: 290 & 294 (1967) and 15: 493. 1968.

The corollas are described as "blue" on S. S. White 1937.

Cave (1961) reports the haploid chromosome number for this species as 7.

Additional citations: ARIZONA: Pima Co.: Pringle s.n. [near Pantano, June 14, 1881] (Ms--30780). MEXICO: Coahuila: S. S.

White 1937 (M1).

VERBENA POGOSTOMA Klotzsch

Additional bibliography: Moldenke, Biol. Abstr. 47: 8471. 1966; Moldenke, Phytologia 14: 294. 1967; Hocking, Excerpt. Bot. A.11: 103. 1967.

VERBENA PULCHELLA Sweet

Additional bibliography: Shinners, Sida 2: 442 & 448. 1966; Solbrig, Biol. Abstr. 47: 2870. 1966; Moldenke, Phytologia 14: 294. 1967.

The Herter 1805 [Herb. Herter 96556], cited below, was previously incorrectly cited by me as V. dissecta f. alba Moldenke.

Additional citations: URUGUAY: Herter 1805 [Herb. Herter 96556] (Du--373695).

VERBENA PULCHELLA var. CLAVELLATA (Troncoso) Shinners

Additional bibliography: Shinners, Sida 2: 442 & 448. 1966; Moldenke, Phytologia 14: 294. 1967.

VERBENA PULCHRA Moldenke

Additional bibliography: Moldenke, Phytologia 13: 256 (1966) and 16: 100 & 194. 1968.

Rambo has found this plant growing in small woods on plains and in rather wet shrubby places. Material has been misidentified and distributed to herbaria by him, as well as cited by him (1965), as V. megapotamica Spreng. and V. phlogiflora Cham.

Additional citations: BRAZIL: Rio Grande do Sul: Rambo, Herb. Anchieta 49084 (B), 54947 (B).

VERBENA PUMILA Rydb.

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Rickett, Wild Fls. U. S. 2 (2): 462 & 686. 1967; Moldenke, Résumé 15: 2. 1967; Moldenke, Phytologia 14: 294 (1967), 15: 488 (1968), and 16: 48. 1968.

Cave (1961) reports the haploid chromosome number for this species as 10. The corolla is described as "blue" on Hess & Hall 656 and these collectors describe the plant as a "trailing annual". The Reverchon s.n. [Curtiss 1963**] collection, cited below, is a mixture with V. ciliata Benth. and V. bonariensis L.

Additional citations: OKLAHOMA: Murray Co.: Hopkins, Nelson, & Nelson 159 (Du--320932), 905 (Du--351542). TEXAS: Dallas Co.: J. Reverchon s.n. [Curtiss 1963**, in part] (Ms--30784). Grayson Co.: H. Gentry 50-94 (Ms--34281). Travis Co.: Armer s.n. [Colorado R., 4-2-29] (Du--363715). Val Verde Co.: Tharp & Havard 49360 (Ms--34325). MEXICO: Nuevo León: Hess & Hall 656 (M1).

VERBENA QUADRANGULATA Heller

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Moldenke, Phytologia 14: 294. 1967; Rickett, Wild Fls.

U. S. 2 (2): 462 & 686. 1967.

Dominguez M. & McCart found this plant growing in a wet place at the water's edge in Tamaulipas. Cave (1961) reports its haploid chromosome number as 10.

Additional citations: TEXAS: Kleberg Co.: M. C. Johnston 5441 (Ms--44074). Nueces Co.: A. A. Heller 1388 (Ms--30816--isotype). MEXICO: Tamaulipas: Dominguez M. & McCart 8182 (Du--511275).

VERBENA RACEMOSA Eggert

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Moldenke, Phytologia 14: 294. 1967.

Cave (1961) reports the haploid chromosome number for this species as 10.

Additional citations: TEXAS: Hudspeth Co.: Tharp & Havard 24294 (Ms--34326).

VERBENA RAMBOI Moldenke

Additional bibliography: Moldenke, Phytologia 14: 295. 1967.

The Rambo, Herb. Anchieta 25786, distributed as V. ramboi by Rambo and so cited by him (1965), is actually V. stellarioides Cham.

VERBENA RECTA H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 224. 1817.

Additional & emended bibliography: H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 224 (1817) and ed. quart., 2: 277. 1818; J. E. Gonzalez, Revist. Cientif. Mex. 1 (14): 17. 1881; Barnhart, Bull. Torrey Bot. Club 29: 590. 1902; Moldenke, Phytologia 14: 295. 1967.

The corollas on H. E. Moore 3428 are described as "deep-blue" and the plant was found growing in meadows. Gonzalez (1881) records the vernacular name "yerba del cristo" for this species.

It should be noted that the H.B.K. reference dates, as corrected above, have been authenticated by consultation of the work by Barnhart (1902).

Additional citations: MEXICO: Morelos: H. E. Moore 3428 (Ws). Oaxaca: Pringle 4769 (Ms--30845).

VERBENA REITZII Moldenke

Additional bibliography: Moldenke, Phytologia 14: 295 (1967) and 16: 102. 1968.

This species has been found growing in shrubby marshes, flowering in January.

Additional citations: BRAZIL: Santa Catarina: Rambo, Herb. Anchieta 60193 (B).

VERBENA RIGIDA Spreng.

Additional & emended bibliography: A. Gray, Syn. Fl. N. Am., ed. 1, 2 (1): 338 (1878) and ed. 2, 2 (1): 338. 1886; Gamble, Fl. Presid. Madras 6: 1106. 1924; L. H. Bailey, Man. Cult. Pl., ed. 1, pr. 1, 628, 629, & 849 (1924) and pr. 2, 628, 629, & 849. 1925;

McCallan, Flow. Gard. Calend. 18. 1927; T. H. Everett, Gard. Chron. Amer. 35: 179. 1931; Watt & Breyer-Brandwijk, Med. & Poison. Pl. S. Afr., ed. 1, 153 & 241. 1932; H. C. Comber, Gard. Chron., ser. 3, 92: 373. 1932; Bonstedt, Pareys Blumengärtn., ed. 1, 2: 274 & 275. 1932; I. N. Anderson, Nat. Hort. Mag. 12: 72. 1933; Anon., Ind. Sem. Ofr. Canje Jard. Bot. Montev. 8. 1935; Rendle, Notes Fl. Bermuda 16. 1937; C. Cheymol, Journ. Pharm. Chim. 1937: [8], 25, & 110. 1937; C. Cheymol, Chem. Centralbl. 2: 1020. 1937; L. H. Bailey, Man. Cult. Pl., ed. 1, pr. 3, 628, 629, & 849 (1938), pr. 4, 628, 629, & 849 (1944), and ed. 2, 840 & 1113. 1949; Karrer, Konstit. & Vork. Organ. Pflanzenst. 279. 1958; Maatsch in Encke, Pareys Blumengärtn., ed. 2, 2: 441-442. 1960; Hellyer, Amat. Gard. Photo Album 184. 1961; Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Watt & Breyer-Brandwijk, Med. & Poison. Pl. S. Afr., ed. 2, 1054 & 1153. 1962; Jiménez, Supl. Cat. Fl. Doming. 1: 220-221. 1966; Gaiser & Moore, Surv. Vasc. Pl. Lambton Co. 100. 1966; Batten & Bokelmann, Wild Fls. East. Cape Prov. 125 & pl. 99 (9). 1966; R. H. Compton, Journ. S. Afr. Bot. Suppl. 6: 157. 1966; J. F. Williamson, Sunset West. Gard. Book, new ed., 437. 1967; M. Raymond, Ann. Résultat. Jard. d'Essai Jard. Bot. Montreal 1966: 61. 1967; Zukowski, Fl. Polska 11: 65. 1967; Rickett, Wild Fls. U. S. 2 (2): 462, 463, & 686, pl. 170. 1967; Moldenke, Phytologia 14: 295 (1967) and 16: 91. 1968.

Additional illustrations: Bonstedt, Pareys Blumengärtn., ed. 1, 2: 275. 1932; Batten & Bokelmann, Wild Fls. East. Cape Prov. pl. 99 (9) [in color]. 1966; Rickett, Wild Fls. U. S. 2 (2): pl. 170 [in color]. 1967.

The corolla is described as "violet" on Krapovickas & Cristóbal 12056 and as "brilliant purple" on DeWolf 741. Compton (1966) records the species from Swaziland, while Zukowski (1967) tells us that it is both cultivated and escaped in Poland. Bonstedt (1932) records the German common name, "geadertes Eisenkraut", for the species.

Maatsch (1960) says for this plant: "Blüten in anfangs doldenförmigen, dann bald verlängerten, gewöhnlich zu dritt beisammenstehenden, gestielten, gleich hohen Ähren, violett. cv. 'Lilacina'. Blüten dunkellila. Deckblätter pfriemlich, bewimpert, samt dem 3 oder 4 mm langen Kelch gefärbt und ihn überragend. Kronröhre schlank, dreimal so lang wie der Kelch. -- 1830. B. M. 3127; Hegi V/3: 2240; Parey I. 2: 275; alle als V. venosa. (K) Diese Art gehört zu den dankbarsten Beetpflanzen und wird ebenso bei bunten Pflanzungen wie auch für Farbenbeete -- etwa zusammen mit Salvia splendens und Senecio cineraria (Cineraria maritima) -- gern verwendet. Anzucht durch Aussaat im März lauwarm; später in Kisten pikierten oder besser in kleine Torftöpfe. Kultur in Einheitserde oder Cyclamen-erde, zuletzt luftig in Kästen, nach Mitte Mai auspflanzen. Der Samen keimt unregelmässig, 1 g hat 1200 Korn. In nicht zu rauhen Gegenden ist diese Art unter Schutzdecke winterhart. Sie kann auch durch Wurzelschnittlinge vermehrt werden. Aussaat ist einfacher und führt schneller zu grossen Sätzen."

Karrer (1958) reports that up to 2 percent of stachyose,

$C_{24}H_{42}O_{21}$, has been extracted from the roots of this species. This substance, however, has also been obtained from such diverse plants as Ballota foetida, Catalpa bignonioides, Cicer arietinum, Clinopodium vulgare, Corylus avellana, C. colurna, Galega officinalis, Jasminum officinale, Lamium album, Leucaena glauca, Lithospermum purpureo-caeruleum, Lupinus luteus, Mentha silvestris, Origanum vulgare, Phaseolus vulgaris, Pinus thunbergii, Plantago carinata, P. maritima, Scrophularia nodosa, S. sambucifolia, Soja hispida, Sphagnum palustre, Stachys tuberifera, Teucrium canadense, Trifolium incarnatum, Trigonella foenum-graecum, and Verbascum thapsiforme.

Williamson (1967) maintains that Verbena rigida is a good plant for low maintenance gardens, blooming in 4 months from seed. Raymond (1967) refers to a cultivar named "Violet Clair". Hellyer (1961) refers to the species as a fairly hardy perennial with suckers. Batten & Bokelmann (1966) describe it as a slender perennial, growing in groups, occasional in grasslands and along roadsides throughout South Africa, as an escape from cultivation, flowering there from October to March. Cave (1961) reports its diploid chromosome number as 42.

Material has been misidentified and distributed in herbaria as V. hirta Spreng. On the other hand, the Pratibha s.n., distributed as V. rigida, is actually V. tenuisecta Briq.

Additional citations: GEORGIA: Calhoun Co.: R. F. Thorne 3597 (M). ALABAMA: Mobile Co.: C. Mohr 68 (Ms--30827). LOUISIANA: Saint Tammany Par.: DeWolf 741 (Ms--34329); Ewan 17797 (Rf), 20229 (Ac). TEXAS: Travis Co.: Tharp s.n. [Austin, 5/2/35] (Du--362693). BRAZIL: Paraná: Hatschbach 14511 (Ac). Rio Grande do Sul: O. Camargo 1944 [Herb. Anchieta 62059] (B); Rambo, Herb. Anchieta 53021 (B), 56783 (B), 57248 (B). ARGENTINA: Misiones: Krapovickas & Cristóbal 12056 (W--2481386); Medina 37 (Du--330770); G. J. Schwarz 1249 (Ms--34327). CULTIVATED: Germany: Herb. Univ. Wisc. s.n. (Ws); Wagenitz s.n. [Mus. Bot. Berol. Gartenherb. W. 377] (Rf).

VERBENA RIGIDA var. LILACINA (Benary & Bodger) Moldenke

Additional synonymy: Verbena rigida cv. "Lilacina" Maatsch in Encke, Pareys Blumengärtn., ed. 2, 2: 441. 1960.

Additional bibliography: L. H. Bailey, Man. Cult. Pl., ed. 2, 840 & 1113. 1949; Moldenke, Phytologia 11: 479. 1965.

VERBENA RIPARIA Raf.

Additional bibliography: Rickett, Wild Fls. U. S. 2 (2): 464 & 686. 1967; Moldenke, Phytologia 14: 295--296. 1967.

Additional citations: VIRGINIA: Smyth Co.: J. K. Small s.n. [about Marion, July 20, 1892] (Ms--30824).

VERBENA ROBUSTA Greene

Additional bibliography: Moldenke, *Phytologia* 11: 479. 1965; Twisselmann, *Wasmann Journ. Biol.* 25: 327. 1967; Moldenke, *Phytologia* 16: 96 & 102. 1968.

Recent collectors have found this plant growing in rich black soil, in alluvial wash, along sandy creek banks, and in creek bottoms with Rhus diversiloba, Sambucus sp., Quercus agrifolia, Holodiscus discolor, Clematis ligusticifolia, and Salix sp. The corollas are described as "blue" on Breedlove 2856.

Twisselmann (1967) records this species from Kern County, California, and says "small colony grown since at least 1956 in mud in full sun at edge of small pool on McGovern Grade in Temblor Range (T 1535). Owner of land who has known area intimately since early 1900's said that it was never seen before anywhere in area."

The Breedlove 4164, distributed as V. robusta, is actually V. lasiostachys var. septentrionalis Moldenke, while K. L. Chambers 728 is V. neomexicana (A. Gray) Small.

Additional citations: CALIFORNIA: San Luis Obispo Co.: C. B. Wolf 3614 (Du--340733). Santa Barbara Co.: Breedlove 833 (Du--488619). Santa Clara Co.: J. H. Thomas 4309 (Du--385226). CHANNEL ISLANDS: Santa Catalina: I. L. Wiggins 1763 (Du--457189). Santa Cruz: Breedlove 2856 (Du--489349).

xVERBENA RYDBERGII Moldenke

Additional synonymy: x*Verbena paniculata* stricta Eng. apud Boivin, *Naturaliste Can.* 93: 429. 1966.

Additional & emended bibliography: Gaiser & Moore, *Surv. Vasc. Pl. Lambton Co.* 100. 1966; Boivin, *Naturaliste Can.* 93: 429. 1966; Moldenke, *Phytologia* 14: 296. 1967; Moldenke, *Résumé Suppl.* 15: 1, 2, & 24. 1967.

Boivin (1966) records this hybrid from Kazabazua in Gatineau County, Quebec -- the specimens deposited in the Phanerogamic Herbarium of the Plant Research Station at Ottawa. The A. R. Moldenke 819 specimens, cited below, were previously cited by me as deposited in my personal herbarium

Additional & emended citations: ILLINOIS: Henderson Co.: H. N. Patterson s.n. [Oquawka, July] (Ms--30839, Ms--30840). Macon Co.: A. R. Moldenke 819 (Ac, B, Ms, Rf, Ws). MISSOURI: Saint Louis: Eggert s.n. [DeHordiamont Av., 4 August 1875] (Ms--30834).

VERBENA SANTIAGUENSIS (Covas & Schnack) Moldenke

Additional bibliography: Anon., U. S. Dept. Agr. Bot. Subj. Ind. 15: 14360. 1958; Moldenke, *Phytologia* 14: 296. 1967.

VERBENA SCABRA Vahl

Additional bibliography: A. Gray, *Syn. Fl. N. Am.*, ed. 1, 2 (1): 335 (1878) and ed. 2, 2 (1): 335. 1886; Jacks. in *Hook. f. & Jacks.*, *Ind. Kew.*, pr. 1, 2: 1179 (1895), pr. 2, 2: 1179 (1946), and pr. 3, 2: 1179. 1960; J. E. Moore, *Castanea* 30: 26. 1965;

Moldenke, Résumé Suppl. 15: 2. 1967; Rickett, Wild Fls. U. S. 2 (2): 464. 1967; Moldenke, Phytologia 14: 296 & 300 (1967) and 15: 495. 1968.

The C. B. Wolf 3614, distributed as V. scabra, is actually V. robusta Greene.

Additional citations: GEORGIA: Sapelo Island: W. H. Duncan 20268 (Ws). FLORIDA: Dade Co.: H. N. Moldenke 24114 (Ac, Rf, Ws). ARIZONA: Pima Co.: Pringle s.n. [July 18, 1884] (Ms-30810). CALIFORNIA: Los Angeles Co.: L. C. Wheeler 2181 (Ms-79259). San Bernardino Co.: Parish & Parish 1043 (Ms-30809). MEXICO: Coahuila: Edw. Palmer 1040 (Ms-30811).

VERBENA SCABRA f. ANGUSTIFOLIA Moldenke

Additional bibliography: Moldenke, Phytologia 14: 296--297. 1967; Moldenke, Résumé Suppl. 15: 2. 1967.

VERBENA SEDULA Moldenke

Additional bibliography: Moldenke, Phytologia 14: 280 & 297 (1967) and 15: 495. 1968.

Wiggins & Porter 660 is said to have had "white" corollas and is described as 60 cm. tall, flowering in February, at 740 meters altitude.

Emended citations: GALAPAGOS ISLANDS: Indefatigable: R. I. Bowman 81 (Gg-461129-isotype); Wiggins & Porter 660 (Z).

VERBENA SELLOI Spreng. in L., Syst. Veg., ed. 16, 2: 750. 1825.

Additional synonymy: Shuttleworthia selloi (Spreng.) Walp., Repert. Bot. Syst. 4: 13. 1845. Shuttleworthia selloi Walp. apud Schau. in A. DC., Prodr. 11: 553, in syn. 1847. Shuttleworthia selloi Walp. ex Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 895, in syn. 1895. Schultevorthia selloi Walp. ex Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 296, in syn. 1904.

Additional bibliography: Shinnars, Sida 2: 448. 1966; Moldenke, Phytologia 14: 297 (1967) and 16: 51 & 96. 1968.

The O. Camargo 2022 [Herb. Anchieta 62124], cited below, was previously cited by me, in error, as V. tenera Willd.

Additional citations: BRAZIL: Rio Grande do Sul: O. Camargo 2022 [Herb. Anchieta 62124] (B); Sehnm 2128 [Herb. Anchieta 48478] (B). URUGUAY: Herter 181c [Herb. Herter 79227] (Ws).

VERBENA SESSILIS (Cham.) Kuntze

Additional bibliography: Moldenke, Phytologia 13: 264. 1966.

Additional citations: ARGENTINA: Formosa: Krapovickas & Cristóbal 13184 (Z).

VERBENA SETACEA Perry

Additional bibliography: Moldenke, Phytologia 11: 156--157. 1964.

Recent collectors have found this plant growing in talus slopes

at the base of basalt cliffs, at 100 feet altitude, flowering in February and October, and describe it as a small suffrutescent perennial. The corollas on I. L. Wiggins 15074 are described as having been "purplish", while those on Wiggins & Thomas 187 were "pinkish-lavender".

Material has been misidentified and distributed in herbaria as V. gooddingii var. gooddingii.

Additional citations: MEXICO: Baja California: I. L. Wiggins 15074 (Du--453237); Wiggins & Thomas 187 (Du--508510).

VERBENA SIMPLEX Lehm.

Additional & emended bibliography: A. Gray, Syn. Fl. N. Am., ed. 1, 2 (1): 336 (1878) and ed. 2, 2 (1): 336. 1886; Marie-Victorin, Fl. Laurent., ed. 2, 490. 1964; Mohlenbrock & Voigt, Trans. Ill. Acad. Sci. 58 (4): 295. 1965; Gaiser & Moore, Surv. Vasc. Pl. Lambton Co. 100. 1966; Boivin, Naturaliste Can. 93: 429. 1966; Hartley, Univ. Iowa Stud. Nat. Hist. 21: 144. 1966; Moldenke, Phytologia 14: 297. 1967; Lehr, Bull. Torrey Bot. Club 94: 544. 1967; Moldenke, Résumé Suppl. 15: 1. 1967; Rickett, Wild Fls. U. S. 2 (2): 464, 465, & 686, pl. 171. 1967.

Additional illustrations: Rickett, Wild Fls. U. S. 2 (2): pl. 171 [in color]. 1967.

Isely found this plant growing along roadsides in Arkansas. Hartley reports it from dry usually sandy soil in Allamakee and Lafayette Counties, Iowa, but notes that it is "rare" there. Mohlenbrock & Voigt (1965) cite Mohlenbrock 12636 from Illinois. Macoun (1884) tells us that the species grows "On dry limestone soils locally abundant" in Canada. He cites Holmes s.n. from the island above Nun's Island, Montreal, 1821; Maclagen s.n. from St. Helen's Island, Montreal; McGill Coll. Herb. s.n. from Strathroy [Middlesex County] and Port Colborne [Welland County], Ontario; Burgess s.n. from the vicinity of Whitby [Ontario County], Ontario; and his own collections leading him to comment "Abundant in dry rocky fields around Belleville [Hastings County], and on rocky ground at Shannonville station [Hastings County], G. T. R.; also very common in the open woods on Massassaga Point, Prince Edward County," Ontario.

Material has been misidentified and distributed in herbaria as Lobelia canbyi A. Gray.

Additional citations: MASSACHUSETTS: Hampshire Co.: Hitchcock s.n. [So. Hadley] (Ms--50705); Jesup s.n. [July 27, 1871] (Ms--45388, Ms--45389); C. H. K. Sanderson 1955 (Ms--72457); W. E. Stone s.n. [June 21, 1879] (Ms--27819); Tuckerman & Tuckerman s.n. [19 June 1865] (Ms--50706). PENNSYLVANIA: County undetermined: E. Durand s.n. [Penna.] (Ms--30747). DELAWARE: Kent Co.: Goodale s.n. [4 July 1924] (Ms--3394). MARYLAND: Queen Annes Co.: Goodale s.n. [27 June 1927] (Ms--51036). VIRGINIA: Lee Co.: J. K. Small s.n. [July 27, 1892] (Ms--30749). Page Co.: Ahlers s.n. [Luray, June 28, '17] (Ms--53673). ILLINOIS: Cook Co.: H. H. Bab-

cock s.n. [Ruverside, June 8, 1871] (Ms--34335). Rock Island Co.:
E. A. Ross s.n. [June 1891] (Ms--111466). TENNESSEE: Blount Co.:
Curtiss 1955 (Ms--30748). MISSOURI: Saint Louis: Nickerson s.n.
 [Gray Summit, May 25, 1952] (Ms--34334). ARKANSAS: Benton Co.:
Isely 2556 (Du--340097). Clark Co.: Demaree 54128 (Ac). CULTIVA-
 TED: Germany: Herb. F. J. Young s.n. (Ws).

VERBENA SINUATA Grieve & Leyel, Modern Herb., pr. 1, 832, hyponym.
 1931.

Bibliography: Grieve & Leyel, Modern Herb., pr. 1, 832 (1931)
 and pr. 2, 832. 1959.

Nothing is known to me about this plant except what the authors
 state in their original publication (1931): "An infusion of the
 roots, taken as freely as possible, is said to be a valuable
 antisiphilitic."

VERBENA STELLARIOIDES Cham.

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 1:
 Suppl. vii & 50. 1959; Moldenke, Phytologia 14: 297 (1967) and 16:
 197. 1968.

Woolston describes this plant as an herb, 30--60 cm. tall, with
 lilac-purple corollas, growing in swamps, swampy campos, or shrub-
 by campos, flowering in August. Cave (1959) reports the haploid
 chromosome number for the species as 5 and the diploid number as
 10.

Material has been misidentified and distributed in herbaria by
 Rambo, and cited by him (1965), as V. ramboi Moldenke.

Additional citations: BRAZIL: Rio Grande do Sul: O. Camargo 51
 [Herb. Anchieta 58698] (B); Rambo, Herb. Anchieta 25780 (B).
 PARAGUAY: Woolston 306 (S).

VERBENA STRICTA Vent.

Additional & emended bibliography: A. Gray, Syn. Fl. N. Am.,
 ed. 1, 2 (1): 336 (1878) and ed. 2, 2 (1): 336. 1886; S. N. F.
 Sanford, Rhodora 6: 88--89. 1904; Schaffner, Ohio Nat. 7 [Contrib.
 Bot. Lab. Ohio State Univ. 27]: 31--34. 1906; Wolden, Proc. Iowa
 Acad. Sci. 39: 122. 1934; G. E. Nichols, Ecology 15: 365. 1934;
 E. R. Spencer, Just Weeds 199, 201, 203, & 204, fog. 65. 1940;
 Chatterjee & Parks, Am. Soc. 71: 2249. 1949; Hylander, Macm. Wild
 Flow. Book 33, [331], & 340, pl. 166R. 1954; Karrer, Konstit. &
 Vork. Organ. Pflanzenst. 454 & 824. 1958; Anon., U. S. Dept. Agr.
 Bot. Subj. Index 15: 14361. 1958; Martin & Bradley, Seed Ident.
 Man. 37, fig. 236. 1961; Cave, Ind. Pl. Chromosome Numb. 2: 63 &
 81. 1961; Mohlenbrock & Voigt, Trans. Ill. Acad. Sci. 58 (4): 295.
 1965; J. E. Moore, Castanea 30: 26. 1965; Gaiser & Moore, Surv.
 Vasc. Pl. Lambton Co. 100. 1966; Wunderlin, Trans. Ill. Acad. Sci.
 59 (2): 143. 1966; Hartley, Univ. Iowa Stud. Nat. Hist. 21: 144.
 1966; Boivin, Naturaliste Can. 93: 429. 1966; Erdtman, Pollen
 Morph. & Pl. Tax. 449, fig. 256A. 1966; Shinn, Univ. Kans. Sci.
 Bull. 46: 790, 881, 886, & 887. 1967; Moldenke, Phytologia 14:
 277, 297--298, & 300. 1967; Moldenke, Résumé Suppl. 15: 1 & 2.

1967; Rickett, Wild Fls. U. S. 2 (2): 462, 464, 465, & 686, pl. 171. 1967.

Additional illustrations: E. R. Spencer, Just Weeds 204, fig. 65. 1940; Martin & Bradley, Seed Ident. Man. fig. 236. 1961; Erdtman, Pollen Morph. & Pl. Tax. 449, fig. 256A. 1966; Rickett, Wild Fls. U. S. 2 (2): pl. 171 [in color]. 1967.

Although the Wolden (1934) reference in the above supplementary bibliography appears to be dated "1932", the late Dr. J. H. Barnhart concluded that it was not actually published until 1934.

Recent collectors have found Verbena stricta growing in open disturbed areas and on rolling grassland sandhills. The Porters describe it as "common in dry gravelly soil" in South Dakota. Hartley (1966) says that it is found on "upland prairies, roadsides, railroads, pastures, and weedy borders of upland woods, scattered throughout the Driftless Area, common". The corollas are described as "purple" on C. L. Porter 7151 and as "lavender" on C. L. Porter 3413. Mohlenbrock & Voigt (1965) cite a Voigt s. n. from Illinois.

Shinn (1967) records the bee, Calliopsis (Verbenapis) verbenae, as an oligolege on this species of vervain in New Mexico. He also states that the bees, C. andreniformis and C. nebraskensis, visit these flowers.

Karrer (1958) reports the presence of "ursosure", $C_{30}H_{48}O_3$, in this plant and in such diverse species as Catalpa bignonioides, Cladonia silvatica, Crataegus oxyacantha, Cryptostegia grandiflora, Enkianthus quinqueflorus, Escallonia tortuosa, Goodenia ovata, Helichrysum italicum, Ilex latifolia, I. paraguariensis, Lavandula spica, Melissa officinalis, Nerium odorum, N. oleander, Photinia glabra, Prunus laurocerasus, Punica granatum, Salvia officinalis, Uva-ursi procumbens, Vinca minor, and Viscum album.

Cave (1961) reports the haploid chromosome number for this species as 7. Erdtman (1966) has examined the pollen of Sandberg 284 from Minnesota and describes the grains as 3-colporate, prolate spheroidal, and $35 \times 32 \mu$ in size. The seeds from which the Wagenitz collection, cited below, was grown came originally from a French garden. Nichols (1934) has shown that the seeds of this species require winter refrigeration in order to germinate.

Additional citations: MASSACHUSETTS: Hampshire Co.: Goodale s. n. [July 26, 1932] (Ms--36715, Ms--67727). PENNSYLVANIA: Lancaster Co.: A. A. Heller s. n. [September 27, 1901] (Ms--30823). ILLINOIS: Cook Co.: H. H. Babcock s. n. [Chicago, Aug. '71] (Ms--34341). La Salle Co.: Boltwood s. n. [Aug. 1881] (Ms--34340). County undetermined: Bebb s. n. [Illinois] (Ms--30817). INDIANA: Vigo Co.: A. Brown s. n. [Terre Haute, July 14/78] (Ms--30820). IOWA: Scott Co.: E. A. Ross s. n. [Davenport, July 1889] (Ms--50458). MINNESOTA: Hennepin Co.: G. B. Aiton s. n. [Aug. '89] (Ms--30819). SOUTH DAKOTA: Lawrence Co.: Porter & Porter 8359 (Du--445148). MISSOURI: Saint Louis: Eggert s. n. [DeHadiamont Av.,

22 July 1875] (Ms--30818). ARKANSAS: Johnson Co.: Demaree 54242 (Ac). Searcy Co.: Demaree 22251 (Ms--50394). County undetermined: F. L. Harvey s.n. [N.W. Arkansas; Curtiss 1958] (Ms--30821). WYOMING: Albany Co.: C. L. Porter 7151 (Du--384931). Weston Co.: C. L. Porter 3413 (Du--331440). NEBRASKA: Banner Co.: Porter & Porter 8752 (Du--455934). Dawes Co.: Porter & Porter 8790 (Du--455815). OKLAHOMA: Cleveland Co.: Carr & Barkley 36316 (Rf). CULTIVATED: Germany: Herb. F. J. Young s.n. (Ws, Ws); Wagenitz s.n. [Mus. Bot. Berol. Gartenherb. W.379] (Rf).

VERBENA STRICTA f. ALBIFLORA Wadmond

Additional bibliography: Schaffner, Ohio Nat. 7 [Contrib. Bot. Lab. Ohio State Univ. 27]: 31--34. 1906; Anon., U. S. Dept. Agr. Bot. Subj. Index 15: 14361. 1958; Moldenke, Phytologia 13: 265. 1966; Boivin, Naturaliste Can. 93: 429. 1966.

Schaffner (1906) tells of seeing several thousand plants with "pinkish-white" corollas and no intermediates, covering an area of about a square mile.

Additional citations: ILLINOIS: Henderson Co.: H. N. Patterson s.n. [near Oquawka, July 1872] (Ms--30822).

VERBENA STRIGOSA Cham.

Additional bibliography: Moldenke, Phytologia 14: 298. 1967.

The Rambo, Herb. Anchieta 51940, distributed as V. strigosa, is actually V. hirta var. gracilis Dusén.

Additional citations: BRAZIL: Rio Grande do Sul: Rambo, Herb. Anchieta 49319 (B), 56628 (B).

VERBENA SUBINCANA (Troncoso) Shimmers

Additional bibliography: Shimmers, Sida 2: 442 & 448. 1966; Moldenke, Phytologia 14: 298. 1967.

VERBENA SULPHUREA D. Don

Additional synonymy: Verbena sulfurea Echeg. ex Hieron., Bol. Acad. Nac. Cienc. Córdoba 4: [Sert. Sanjuan.] 68--69, in syn. 1881. Verbena sulphurea Swiet ex Lorentz & Niederlein, Bot. Exped. Rio Negro 266, sphalm. 1881.

Additional bibliography: Hieron., Bol. Acad. Nac. Cienc. Córdoba 4: [Sert. Sanjuan.] 68--69 (1881) and 4: 407. 1881; Lorentz & Niederlein, Bot. Exoed. Rio Negro 266. 1889; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 895, 1161, 1178, & 1179 (1895) and pr. 2, 2: 895, 1161, 1178, & 1179. 1946; Anon., U. S. Dept. Agr. Bot. Subj. Index 15: 14361. 1958; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 895, 1161, 1178, & 1179. 1960; Moldenke, Phytologia 14: 282 & 298 (1967) and 16: 101. 1968.

The U. S. Dept. Agr. Bot. Subj. Index (1958) lists the Fisch. & Mey. (1840) reference cited by me in the bibliography of this species as "Fischer....Mém. Acad. Sci. St. Petersb. s. 6, Sci. Nat. 4 (Bot): 153--156. pl. 1845 [1840]".

Hieronymus (1881) describes two forms of this species without

special nomenclatural designation under what he calls Verbena microphylla Kunth [= V. microphylla H.B.K.]. The first of these, with slightly strigose-hispidulous foliage, he says is the same as "V. sulfurea Echeg.", while the other form, with canescent and densely strigose-hispidulous foliage, he says is the same as "V. sulfurea var. canescens Phil." It is not clear just what sort of mixup is involved here. Verbena sulphurea D. Don can hardly be confused with V. microphylla H.B.K. Possibly he refers here to V. microphylla R. A. Phil., which is actually Junellia minutifolia (R. A. Phil.) Moldenke.

Additional citations: CHILE: Valparaiso: Zöllner 1487 (Rf).

VERBENA SUPINA L.

Additional bibliography: Schnitzl., Icon. Fam. Nat. Reg. Veg. 137, fig. 2 & 4--22. 1856; Boiss., Fl. Orient. 4: 534. 1879; Covas & Hunziker, Rev. Invest. Agr. Buenos Aires 8: 251 & 253, fig. 13. 1954; Cave, Ind. Pl. Chromosome Numb. 1: Suppl. 50. 1959; Prodan & Buia, Fl. Mic. Ilus. Roman. 401 & 403, fig. 369. 1966; Moldenke, Résumé Suppl. 15: 5 & 6. 1967; Zukowski, Fl. Polska 11: 64 & 65. 1967; Hedge, Notes Roy. Bot. Gard. Edinb. 28: 81. 1967; Moldenke, Phytologia 14: 298--299 (1967) and 15: 484. 1968.

Additional illustrations: Schnitzl., Icon. Fam. Nat. Reg. Veg. 137, fig. 2 & 4--22 [in color]. 1856; Covas & Hunziker, Rev. Invest. Agr. Buenos Aires 8: 253, fig. 13. 1954; Prodan & Buia, Fl. Mic. Ilus. Roman. fig. 369. 1966.

Dr. I. L. Wiggins, in a letter to me dated March 16, 1967, states that the specimens cited below in the Dudley Herbarium all look to him as though the plant was prostrate "with a part of a prostrate or sub-prostrate branch.....cut or broken from the plant, and erect branches springing from it." Until more is known about the habit of this species, I am leaving these specimens here.

The Boissier (1879) reference in the bibliography given above is sometimes cited as "1875", but the page involved actually was not issued until 1879.

Hedge (1967) describes a specimen of this species collected by Paul Dietrich Giseke, now deposited in the herbarium of the Royal Botanic Garden at Edinburgh, dated between 1776 and 1779 and inscribed "ex H.E.U." -- it is assumed that this specimen was sent to Edinburgh by Adolf Murray and that it was collected in the Hortus Botanicus Upsaliensis, which was Linnaeus' garden at Uppsala, Sweden.

Cave (1959) reports the diploid chromosome number for this species as 14.

Emended citations: TUNISIA: Kralik 321, in part (Du--448692). EGYPT: A. Wiest 90 [Herb. Prager 18642], in part (Du--448691). SUDAN: Nubia: Kotschy 323, in part (Du--166451). JORDAN: Field & Lazar 190, in part (Du--235839).

VERBENA SUPINA f. ERECTA Moldenke

Additional bibliography: Moldenke, *Phytologia* 14: 299. 1967.

Dr. I. L. Wiggins, in a letter dated March 16, 1967, tells me that the specimens of Kralik 321, A. Wiest 90, Kotschy 323, and Field & Lazar 190 in the Dudley Herbarium appear to him as though the main stems of the plant were definitely prostrate or subprostrate, with erect branches springing from them. The species obviously needs more study in the field to determine if this so-called erect form is actually a valid one.

Additional citations: SPAIN: Herb. F. J. Young s.n. (Ws).

VERBENA TAMPENSIS Small

Additional bibliography: Moldenke, *Phytologia* 11: 481. 1965; Rickett, *Wild Fls. U. S. 2* (2): 462 & 686. 1967.

Lakela found this plant growing in disturbed open pineland with secondary longleaf pine, sabal palmetto and saw palmetto, Myrica, Lyonia, and Befaria, and describes it as having "branches profuse from the crown, decumbent". The corollas are said to have been "rose-purple" on Lakela 24997.

Additional citations: FLORIDA: Brevard Co.: Curtiss 1963 (Ms--30753). Hillsborough Co.: Lakela 24997 (Du--504244).

xVERBENA TEASII Moldenke

Additional bibliography: L. H. Bailey, *Man. Cult. Pl.*, ed. 2, 840, 841, & 1113. 1949; Moldenke, *Phytologia* 11: 481. 1965.

VERBENA TENERA Spreng.

Additional bibliography: H. Fischer, *Beitr. Vergl. Morphol. Pollenk.* 46--47. 1890; L. H. Bailey, *Man. Cult. Pl.*, ed. 1, pr. 1, 628, 629, & 849 (1924) and pr. 2, 628, 629, & 849. 1925; Bonstedt, *Pareys Blumengärtn.*, ed. 1, 274. 1932; L. H. Bailey, *Man. Cult. Pl.*, ed. 1, pr. 3, 628, 629, & 849 (1938), pr. 4, 628, 629, & 849 (1944), and ed. 2, 840, 841, & 1113. 1949; Maatsch in Encke, *Pareys Blumengärtn.*, ed. 2, 2: 442. 1960; Deb, *Bull. Bot. Surv. India* 3: 315. 1961; Moldenke, *Résumé Suppl.* 15: 24. 1967; J. F. Williamson, *Sunset West. Gard. Book*, new ed., 437. 1967; Moldenke, *Phytologia* 14: 299 (1967) and 16: 96 & 201. 1968.

Bonstedt (1932) places V. pulchella Sweet and V. multifida Hort. in the synonymy of V. tenera, but I regard the former as a valid species and the latter as a synonym of V. laciniata (L.) Briq. He records the German common name, "zartes Eisenkraut". It is perhaps worth quoting here the complete description of this taxon as given by Maatsch (1960) to illustrate the horticulturists' concept of the species: "V. tenera Spreng. Brasilien, Uruguay, Argentinien. Sommer bis Herbst. Staudig-halbstrauchig, meist einjährig kultiviert, 15--30 cm hoch, sehr ästig, kriechend, mit niedergestreckten, wurzelschlagenden, dann aufstrebenden, leich behaarten Stengeln. Blätter gegenständig, tief-, meist fiederförmig-eingeschnitten, mit linealischen, spitzlichen, meist ganzrandigen, am Rande fast umgebogenen, zerstreut-striegelhaarigen Lappen. Blüten in einzelnen oder dreizähligen, anfangs dichten und doldenförmigen,

während der Blütezeit sich verlängernden Ähren, violettrosa. — 1832. Eine italienische Sorte ist CV. 'Maonettii'; ihre Blätter sind breiter, die Kronröhre ist fast doppelt so lang wie der Kelch, an der Einfüguugsstelle der Staubblätter gebärtet, sonst aber kahl. Kronabschnitte keilförmig-verkehrt-herzförmig. Deckblätter lanzettlich, zugespitzt, halb so lang wie der behaarte Kelch. Blüten lebhaft karmesin-violettrot, mit ausgeprägtem, weissem Rande. Diese Sorte wird auch als Hybride zwischen V. tenera x V. incisa angesehen. Sie ist die Stammform der sogenannten 'Italienischen Verbenen', die durch auf weissem Grunde rot-, rosa-, blau- oder lilagestreifte Blüten gekennzeichnet sind. Sie spielen im heutigen Sortiment keine Rolle mehr. (K) V. tenera ist, abgesehen von V. rigida, härter als die übrigen Arten und gut für Einfassungen und bunte Pflanzungen geeignet. Da die kriechenden Stengel bald wurzeln und sich ausbreiten, kann diese Art und ihre Sorten auch für grössere Flächen oder Unterpflanzungen, z.B. von Gladiolen, verwendet werden. Anzucht aus Samen in März, wie vorige. Vermehrung auch durch Stecklinge oder Ableger."

Deb records V. tenera from cultivation in Manipur, India, but I strongly suspect that the plant he refers to is V. tenuisecta. Briq.

The Spies s.n., Pivetta 1155, and Herb. Anchieta 61292 & 63244, distributed as V. tenera, are actually V. tenuisecta Briq., while the O. Camargo 2022 [Herb. Anchieta 62124], cited by me as V. tenera in a previous publication, proves to be V. selloi Spreng.

Additional citations: BRAZIL: Paraná: Hatschbach 14968 (Ac), 14984 (Rf).

VERBENA TENERA var. MAONETTI Regel

Additional synonymy: Verbena mahonetii Hort. ex Bonstedt, Pareys Blumengärtn., ed. 1, 2: 274, in syn. 1932. Verbena tenera x incisa Bonstedt, Pareys Blumengärtn., ed. 1, 2: 274. 1932.

Verbena tenera var. maonettii Regel ex L. H. Bailey, Man. Cult. Pl., ed. 2, 841. 1949. Verbena tenera cv. "Maonettii" Maatsch in Encke, Pareys Blumengärtn., ed. 2, 442. 1960.

Additional bibliography: Bonstedt, Pareys Blumengärtn., ed. 1, 2: 274. 1932; L. H. Bailey, Man. Cult. Pl., ed. 2, 841 & 1113. 1949; Maatsch in Encke, Pareys Blumengärtn., ed. 2, 2: 442. 1960; Moldenke, Phytologia 11: 481. 1965; Moldenke, Résumé Suppl. 15: 24. 1967; J. F. Williamson, Sunset West. Gard. Book, new ed., 437. 1967.

Williamson (1967) describes this plant as creeping, with flat clusters of pink flowers with white margins. A German common name for plants of this variety is "italienischen Verbenen".

VERBENA TENUISECTA Briq.

Additional bibliography: L. H. Bailey, Man. Cult. Pl., ed. 2, 840, 841, & 1113. 1949; Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Deb, Bull. Bot. Surv. India 3: 315. 1961; Maheshwari, Fl.

Delhi 278--279. 1963; Sharp & Baker, *Castanea* 29: 183. 1964; Batson, *Wild Fls. S. C.* 99. 1964; Teague, *Anal. Mus. Host. Nat. Montev.*, ser. 2, 7 (4): 44. 1965; Jiménez, *Supl. Cat. Fl. Doming.* 1: 221. 1966; R. H. Compton, *Journ. S. Afr. Bot. Suppl.* 6: 65 & 157. 1966; Solbrig, *Biol. Abstr.* 47: 2870. 1966; Twisselmann, *Wasmann Journ. Biol.* 25: 327. 1967; Moldenke, *Résumé Suppl.* 15: 1, 2, 7, & 15. 1967; Rickett, *Wild Fls. U. S. 2* (2): 462, 463, & 686, pl. 170. 1967; Shinn, *Univ. Kans. Sci. Bull.* 46: 886. 1967; Moldenke, *Phytologia* 14: 287 & 299 (1967), 15: 486 & 493 (1968), and 16: 51, 185, 188, 199, & 208. 1968.

Additional illustrations: Batson, *Wild Fls. S. C.* 99 [in color]. 1964; Rickett, *Wild Fls. U. S. 2* (2): pl. 170 [in color]. 1967.

The Porters describe this plant as common in "open weedy areas in sandy soil" in Taylor County, Florida, having the "stems prostrate and rooting". Teague (1965) refers to it as a ruderal weed, spreading to crops, used as a diuretic and laxative in medicine. Compton (1966) records this species from Swaziland. Cave (1961) reports the diploid chromosome number as 10.

The corollas are described as "pinkish-lavender" on Porter & Porter 8913. Those on Demaree 49561 have the appearance, when dried, as though they might have been white when fresh, although the collector does not state this fact on the label. The Andrew Moldenkes report, and illustrate by means of kodachrome photographs of the plants in situ, that their no. 2033 represents plants with mostly normal-colored corollas growing with some that had pink and some others that had white corollas.

Sharp & Baker (1964) report the species from Henderson County, Tennessee, on the basis of a specimen in the herbarium of the University of Tennessee.

The "Verbena bipinnatifida Nutt." and "Verbena bipinnatifida Schau." recorded by various recent Indian authors, including Maheshwari (1963), appear to be based on misidentifications. The plant to which they refer and which they in some cases describe is most certainly V. tenuisecta. The description given by Maheshwari, for instance, is: "Prostrate perennials; leaves dissected into linear segments; flowers lilac-purple, in dense heads elongating in fruits....A prostrate, hirsute, perennial herb with ascending stems. Leaves divided into linear divisions, long-petiolate. Flowers lilac-purple, in dense heads elongating in fruits. Bracts equalling the sepals. Calyx lobes setaceous. Cultivated in garden beds and along slopes of private roads, forming a thick carpet and beautifying the landscape; often met as an escape in waste places near gardens. Flowers and Fruits: Winter season." He cites Maheshwari 241.

Twisselmann (1967) records the species from Kern County, California, and says "occasional escape in vacant lots, waste places, about Bakersfield -- at the Antelope Ranch grounds."

Deb (1961) records V. tenera Spreng. as cultivated in gardens in Manipur, India, represented by his no. 198, but I suspect that his plant will probably prove to be V. tenuisecta.

Shinn (1967) reports that he has observed only the males of the

bee, Calliopsis (Verbenapis) andreniformis, visiting the flowers of this vervain at Nacogdoches, Texas.

Material of V. tenuisecta has been misidentified and distributed in herbaria under the names V. drummondii Baxt. and V. venosa Gill. & Hook.

Additional citations: GEORGIA: Brooks Co.: Demaree 52786a (Ms-50395). Colquitt Co.: Demaree 48535 (Ms--50396). Effingham Co.: R. S. Wisner s.n. [Sept. 5, 1934] (Ms--78857). Sumter Co.: Demaree 49561 (Ms--50397). Ware Co.: Kuns 224 (Ws), 300 (Ws). FLORIDA: Gadsden Co.: Goodale s.n. [20 March 1933] (Ms--69848). Taylor Co.: Porter & Porter 8913 (Du--491207). LOUISIANA: Orleans Par.: Ewan 18008 (Rf). Sabine Par.: Ewan 21148 (Ac). TEXAS: Harris Co.: Nickerson s.n. [April 10, 1950] (Ms--34284). ARIZONA: Cochise Co.: Moldenke & Moldenke 2033 (Rf, Z--photo, Z--photo). BRAZIL: Paraná: Hatschbach 15051 (Ac). Rio Grande do Sul: Pivetta 1155 [Herb. Anchieta 61292] (B); Rambo, Herb. Anchieta 51652 (B); Spies s.n. [Herb. Anchieta 63244] (B). ARGENTINA: Formosa: Krapovickas 13080 (Rf). Misiones: G. J. Schwarz 2260 (Ms--34344). CULTIVATED: India: Pratibha s.n. (Ws). New York: H. N. Moldenke 24324 (Ac). Paraguay: G. W. Teague 44 (Ws).

VERBENA TENUISECTA var. ALBA Moldenke

Additional bibliography: L. H. Bailey, Man. Cult. Pl., ed. 2, 841 & 1113. 1949; Moldenke, Phytologia 13: 273. 1966.

As mentioned above, the Andrew Moldenkes report, and illustrate by means of kodachrome photographs of the plants in situ, that their collection no. 2033 represents not only plants with normal-colored corollas, but also some with pink- and some with white-colored corollas, growing in Cochise County, Arizona. The pink form does not yet have nomenclatural designation, but appears to be worthy of it. I hereby designate it VERBENA TENUISECTA f. RUBELLA Moldenke, f. nov. Haec forma a forma typica speciei corollis rubellis recedit.

VERBENA TENUISPICATA Stapf, Denkschr. Math.-nat. Class. K. Akad. Wiss. Wien 50 [Bot. Ergebn. Polak. Exped. 1]: 34--35. 1885.

Synonymy: Verbena officinalis var. tenuiscapa Stapf ex Bormm., Beih. Bot. Centralbl. 22 (2): 117. 1907.

Additional & emended bibliography: Stapf, Denkschr. Math.-nat. Class. K. Akad. Wiss. Wien 50 [Bot. Ergebn. Polak. Exped. 1]: 34--35. 1885; Bormm., Beih. Bot. Centralbl. 22 (2): 117. 1907; Moldenke, Phytologia 11: 304. 1965; Moldenke, Résumé Suppl. 15: 24. 1967.

VERBENA TEUCRIIFOLIA Mart. & Gal.

Additional bibliography: Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Moldenke, Phytologia 14: 299--300. 1967.

The corollas on H. E. Moore 3122 are described as "magenta" and the plant was found growing in fir forests. My son, Andrew R.

Moldenke, informs me that the corollas on his collection number 1756 were "light-magenta" in color and that this collection is representative of hundreds of plants that were growing in close proximity to equally large colonies of plants with "dark-magenta" corollas, represented by his number 1757. He states that the colonies were very distinct in the field, with no intermediates. He also states that the plants represented by his number 1756, 1757, & 1765 were completely prostrate, even the inflorescences were prostrate, with the foliage closely appressed to the ground or rock. His number 1780, on the other hand, represents plants with erect stems and inflorescences and an entirely different aspect in the field. It is very possible that several taxa are represented here.

Cave (1961) reports the haploid chromosome number for this species as 15.

Additional citations: MEXICO: Hidalgo: H. E. Moore 3122 (Ws). Michoacán: A. R. Moldenke 1756 (Rf), 1757 (Rf), 1765 (Ac), 1780 (Ac). Veracruz: Beaman 2191 (Ws); Moldenke & Moldenke s.n. [border of Veracruz & Puebla on Rt. No. 140, Aug. 1, 1967] (Z--photo).

VERBENA THYMOIDES Cham.

Additional bibliography: Moldenke, *Phytologia* 14: 300. 1967.

Additional citations: BRAZIL: Rio Grande do Sul: O. Camargo 105 [Herb. Anchieta 58767] (B), 216 [Herb. Anchieta 58730] (B); Rambo, Herb. Anchieta 48873 (B).

VERBENA TOWNSENDII Svenson

Additional bibliography: Moldenke, *Phytologia* 11: 316--317. 1965.

The A. Stewart 3317 referred to V. glabrata H.B.K. on page 317 of the reference given above is actually the type collection of V. glabrata var. temuispicata Moldenke.

VERBENA TRIFIDA H.B.K., *Nov. Gen. & Sp. Pl.*, ed. folio, 2: 221, pl. 134. 1817.

Additional & emended bibliography: H.B.K., *Nov. Gen. & Sp. Pl.*, ed. folio, 2: 221, pl. 134 (1817), ed. quart., 2: pl. 134 (1817), and ed. quart., 2: 273. 1818; Barnhart, *Bull. Torrey Bot. Club* 29: 590. 1902; Moldenke, *Phytologia* 14: 300. 1967.

Additional & emended illustrations: H.B.K., *Nov. Gen. & Sp. Pl.*, ed. folio, 2: pl. 134 [in color] (1817) and ed. quart., 2: pl. 134. 1817.

It should be noted here that the H.B.K. reference dates given above have been authenticated by consultation of the work by Barnhart (1902).

xVERBENA TRINITENSIS Moldenke

Additional bibliography: Moldenke, *Phytologia* 11: 481 (1965) and 16: 185 & 188. 1968.

Comments recently made by Krapovickas seem to indicate that this

hybrid may be identical with V. calliantha Briq. At least, he feels that his collection number 13085 [cited by me as V. calliantha Briq.] is a natural hybrid between his number 13087 [which is V. incisa Hook., but which he regarded as Glandularia peruviana] and his number 13080 [cited by me as V. tenuisecta Briq.]

VERBENA TRISTACHYA Troncoso & Burkart

Additional bibliography: Anon., U. S. Dept. Agr. Bot. Subj. Index 15: 14361. 1958; Cave, Ind. Pl. Chromosome Numb. 1: Suppl. vii & 50. 1959; Moldenke, Phytologia 11: 321—324. 1965.

Cave (1959) reports the haploid chromosome number for this species as 5.

VERBENA URTICIFOLIA L.

Additional synonymy: Verbena urticifolia Willd. ex Moldenke, Résumé Suppl. 15: 24, in syn. 1967. Verbena urticaefolia A. Gray, in herb.

Additional & amended bibliography: Robin, Fl. Louis. 385. 1807; Raf., Fl. Ludovic., pr. 1, 39. 1817; A. Gray, Syn. Fl. N. Am., ed. 1, 2 (1): 335. 1878; Fowler, Rep. Sec. Agr. N. Bruns. 1879, App. 5. 1880; G. U. Hay, Bull. Nat. Hist. Soc. N. Bruns. 2: 30. 1883; J. Macoun, Cat. Can. Pl. 378—379. 1884; Fowler, Bull. Nat. Hist. Soc. N. Bruns. 4: 50. 1885; A. Gray, Syn. Fl. N. Am., ed. 2, 2 (1): 335. 1886; A. S. Hitchc., Ann. Rep. Mo. Bot. Gard. 4: 117. 1893; H. Fischer, Beitr. Vergl. Morphol. Pollenk. 46. 1890; Grieve & Leyel, Modern Herb., pr. 1, 2: 832. 1931; Wolden, Proc. Iowa Acad. Sci. 39: 122. 1934; Rendle, Notes Fl. Bermuda 9. 1937; E. R. Spencer, Just Weeds 199—201 & 204, fig. 64. 1940; L. J. Bradley, Ferns & Flow. Pl. Audubon Cent. 67. 1955; Grieve & Leyel, Modern Herb., pr. 2, 2: 832. 1959; Cave, Ind. Pl. Chromosome Numb. 2: 63, 81, & 137. 1961; H. L. Hoffman, Castanea 29: 31. 1964; Marie-Victorin, Fl. Laurent., ed. 2, 489 & 490, fig. 170. 1964; Rodgers & Shake, Castanea 30: 163. 1965; Mohlenbrock & Voigt, Trans. Ill. Acad. Sci. 58 (4): 295. 1965; Reese & Thieret, Castanea 31: 274. 1966; Gaiser & Moore, Surv. Vasc. Pl. Lambton Co. 100. 1966; Wunderlin, Trans. Ill. Acad. Sci. 59 (2): 143. 1966; Hartley, Univ. Iowa Stud. Nat. Hist. 21: 144. 1966; Boivin, Naturaliste Can. 93: 429. 1966; Silberhorn, Castanea 31: 293. 1966; Shinn, Univ. Kans. Sci. Bull. 46: 790, 886, 887, & 928. 1967; Cody, Ind. Sem. 1967: 18. 1967; Rickett, Wild Fls. U. S. 2 (2): 462, 464, & 686, pl. 173. 1967; Raf., Fl. Ludovic., pr. 2, 39. 1967; Fulling, Ind. Bot. Record. Bot. Review 563. 1967; Moldenke, Résumé Suppl. 15: 1, 2, & 24. 1967; Davidson & Buell, Am. Midl. Nat. 77: 381. 1967; Zukowski, Fl. Polska 11: 65. 1967; Moldenke, Phytologia 14: 277, 298, & 300—301 (1967) and 16: 52, 90, 185, & 192. 1968.

Additional illustrations: E. R. Spencer, Just Weeds 200, fig. 64. 1940; Marie-Victorin, Fl. Laurent., ed. 2, fig. 170. 1964; Rickett, Wild Fls. U. S. 2 (2): pl. 173 [in color]. 1967.

Although the Wolden reference in the bibliograph above (1934) is dated "1932", the late Dr. J. H. Barnhart concluded that it was not actually published until 1934.

Recent collectors report finding this plant growing on moist banks and in rich woods. Rodgers & Shake (1965) report it from Transylvania County, North Carolina, and from Oconee County, South Carolina. Reese & Thieret (1966) record it from the Five Islands of Louisiana, while Silberhorn (1966) found it growing in the ruins of an old saw mill in Monongalia County, West Virginia. Wunderlin (1966) records it from Carroll County, Illinois. Hartley (1966) tells us that it is to be found in "roadsides, low pastures, and stream banks, common in [the] Driftless Area except in [the] northeastern counties". Mohlenbrock & Voigt (1965) cite a Stieglitz s.n. from Illinois. Boivin (1966) records it from New Brunswick and Saskatchewan. Fowler (1880, 1885) cites a Hay s.n. and a Moser s.n. from Keswick Ridge and a Hay s.n. from Eel River, York County, New Brunswick. Hay (1883) also speaks of the Eel River station. Macoun (1884) says that the species grows in "Waste places, roadsides, and old pastures, appearing as if introduced but certainly indigenous. Keswick Ridge, N. B. (Moser). St. Remi, Q. (McGill Coll. Herb.) Roadside, Côté St. Antoine, and other localities near Montreal, 1821. (Holmes.) Valley of the St. Charles, near Quebec. (Thomas). Not uncommon in Ontario extending west to Owen Sound." Zukowski (1967) states that it is both cultivated and escaped in Poland.

Dr. Boivin, in a letter to me dated May 1, 1967, says "To my knowledge there are specimens of Verbena urticifolia from New Brunswick in only four collections. None at the Gray, New York, University of Montreal, National Herbarium of Canada, etc. Records are: Narrows Dam, Victoria co. (DAO, UNB) and Keswick, York co. (DAO, AFES)." The herbaria to which he refers are the Phanerogamic Herbarium, Plant Research Institute, Ottawa, the University of New Brunswick, and the Forest Research Branch, Department of Forestry, Fredericton, New Brunswick.

Shinn (1967) observed the females of the bees, Calliopsis (Verbenapis) andreniformis and C. nebraskensis, gathering pollen from the flowers of this vervain. It should be noted here that the alternate generic name for this group of insects was inadvertently misspelled by me in Phytologia 14: 300 (1967).

Spencer (1940) states that the woody stems of this plant are used as arrows by country boys and to make brushes for fighting bumblebees. Cave (1961) reports the haploid chromosome number for the species as 7 and the diploid number as 14.

Material has been misidentified and distributed in herbaria as xV. engelmannii Moldenke.

Additional citations: VERMONT: Rutland Co.: Goodale s.n. [6 Aug. 1926] (Ms--48537). MASSACHUSETTS: Franklin Co.: W. D. Forbes 143 (Ms--72676); Goodale & Markert s.n. [11 Aug. 1932] (Ms--67705); Goodale, Markert, & Piper s.n. [7 Aug. 1929] (Ms--55642). Hampden Co.: Clark & Seymour G.682 (Ms--71570); Dorwart s.n. [18 July 1932] (Ms--68338); Goodale & Markert s.n. [25 July 1930] (Ms--59638). Hampshire Co.: Elwell s.n. [July 16, 1889] (Ms--50455); Goodale s.

n. [27 July 1927] (Ms--51798), s.n. [3 Aug. 1933] (Ms--70884); Goodale, Potsubay, & St. John s.n. [22 July 1931] (Ms--64868), s. n. [13 August 1931] (Ms--64865); Herb. Amherst Coll. s.n. (Ms--45386, Ms--45390); Pease 20359 (Ms--54509); F. R. Saint John s.n. [11 Sept. 1930] (Ms--59636). Worcester Co.: Goodale & Markert s. n. [12 Aug. 1930] (Ms--59639); Goodale, Markert, & Piper s.n. [26 July 1929] (Ms--55643), s.n. [24 Aug. 1929] (Ms--55641); Goodale, Potsubay, & St. John s.n. [31 July 1931] (Ms--64866), s. n. [3 Aug. 1931] (Ms--64867); Potsubay s.n. [26 June 1930] (Ms--59637). CONNECTICUT: Hartford Co.: Ahles 65310 (Ms--51738). New Haven Co.: C. H. K. Sanderson 1957 (Ms--72455). NEW YORK: Bronx Co.: A. Brown s.n. [July 31, '75] (Ms--30826). Dutchess Co.: Ahles 53066 (Ms--50540); Poppey s.n. [Aug. 5th, '74] (Ms--58351). Nassau Co.: M. Hopkins s.n. [22 Aug. 1929] (Ms--57730), s.n. [7 Aug. 1930] (Ms--59626). Saratoga Co.: P. Potter s.n. [Aug. 30, 1932] (Ms--69320). PENNSYLVANIA: Philadelphia Co.: E. Durand s. n. [near Philad.] (Ms--30825). OHIO: Butler Co.: T. J. Cobbs 144 (Du--447704). ILLINOIS: Tazewell Co.: V. H. Chase 3228 (Du--367443). ARKANSAS: Cross Co.: Demaree 19633 (Ms--50424). LOUISIANA: Saint Landry Par.: Ewan 19328 (Rf). Saint Tammary Par.: Ewan 17791 (Ac, Rf). CULTIVATED: Germany: Herb. F. J. Young s.n. (Ws); Wagenitz s.n. [Mus. Bot. Berol. Gartenherb. W.378] (Rf).

VERBENA URTICIFOLIA var. LEIOCARPA Perry & Fernald

Additional bibliography: Moldenke, *Phytologia* 14: 301. 1967; Moldenke, *Résumé Suppl.* 15: 1. 1967.

xVERBENA VAGA Moldenke

Additional bibliography: Moldenke, *Phytologia* 14: 301. 1967.

Illustrations: Schnack & Gonzalez, *Revist. Argent. Agronom.* 12: 286, 287, & 289, fig. 1B, D, & E, & 3, pl. 15 A, B, & C. 1945.

VERBENA VALERIANOIDES H.B.K., *Nov. Gen. & Sp. Pl.*, ed. folio, 2: 224. 1817 [not V. valerianoides St.-Hil., 1947].

Additional & emended bibliography: H.B.K., *Nov. Gen. & Sp. Pl.*, ed. folio, 2: 224 (1817) and ed. quart., 2: 277. 1818; Barnhart, *Bull. Torrey Bot. Club* 29: 590. 1902; Moldenke, *Phytologia* 14: 301. 1967.

It should be noted here that the H.B.K. reference dates given above have been authenticated by consultation with the work of Barnhart (1902).

VERBENA WRIGHTII A. Gray

Additional & emended bibliography: A. Gray, *Syn. Fl. N. Am.*, ed. 1, 2 (1): 337--338 (1878) and ed. 2, 2 (1): 337--338. 1886; Cave, *Ind. Pl. Chromosome Numb.* 2: 137. 1961; Solbrig, *Madroffio* 16: 267. 1962; Cave, *Ind. Pl. Chromosome Numb.* 2: 216. 1963;

Moldenke, Phytologia 14: 301 (1967), 15: 485 & 486 (1968), and 16: 48 & 54. 1968.

The Porters have found this species growing in dry clayey deserts with Covillea and Lepidium and report it as "common along roadsides on the plains" in San Miguel County, New Mexico. Cave (1961, 1963) reports the haploid chromosome number for this species as 10 and the diploid number as 20.

The L. Benson 8821, distributed as V. wrightii, is actually V. bipinnatifida Nutt., while N. H. Russell 11233 is V. gooddingii Briq. and the Wooton 642, distributed as "Verbena bipinnatifida x wrightii ?" is V. ambrosifolia Rydb. The Wooton & Standley s.n. [Aug. 25, 1907] specimen, cited below, was apparently originally distributed with a label reading "3635", but that number was later crossed out in ink.

Additional citations: COLORADO: El Paso Co.: Kraus s.n. [June 22, 1926] (Ws). TEXAS: Brewster Co.: McKetchnie 441 (Ws); R. Mc Vaugh 7868 (Du--366742). Culberson Co.: Hitchcock & Stanford 6782 (Du--352758). Jeff Davis Co.: Tharp 51-22 (Ms--34250); Tharp & Janszen 49-1140 (Ms--34251). Reeves Co.: Nelson & Nelson 4983 (Du--331413), 5014 (Du--331414). NEW MEXICO: Dona Ana Co.: Wooton s.n. [1900; Herb. Field Mus. 25638] (Ws), s.n. [May 26, 1905; Herb. Field Mus. 25537] (Ws). Eddy Co.: Porter & Porter 8978 (Du--491335). Grant Co.: O. B. Metcalfe 126 (Ms--30829). Lincoln Co.: Wooton & Standley s.n. [Aug. 25, 1907; Herb. Field Mus. 27453] (Ws). San Miguel Co.: C. L. Porter 3016 (Du--328695). Santa Fe Co.: Heller & Heller 3536 (Ms--30760). Sierra Co.: O. B. Metcalfe 1090 (Ms--30752).

VERBENA XUTHA Lehm.

Additional & emended bibliography: A. Gray, Syn. Fl. N. Am., ed. 1, 2 (1): 335 (1878) and ed. 2, 2 (1): 335. 1886; Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Reese & Thieret, Castanea 31: 274. 1966; Moldenke, Phytologia 13: 276. 1966; Moldenke, Résumé Suppl. 15: 2. 1967; Rickett, Wild Fls. U. S. 2 (2): 464, 465, & 686, pl. 171. 1967.

Additional illustrations: Rickett, Wild Fls. U. S. 2 (2): pl. 171 [in color]. 1967.

Demaree refers to this plant as "common in chalk area" in Arkansas. Reese & Thieret (1966) record the species from the Five Islands of Louisiana. Cave (1961) reports the haploid chromosome number for the species as 21.

The M. E. Jones 28296, distributed as V. xutha, is actually V. canescens var. roemeriana (Scheele) Perry.

Additional citations: ARKANSAS: Little River Co.: Demaree 54082 (Rf), 54085a (Ac). LOUISIANA: Saint Tammany Par.: Ewan 20208 (Ac). Vermillion Par.: Ewan 21369 (Rf). TEXAS: Harris Co.: G. L. Fisher s.n. [June 9, 1912] (Ws), s.n. [May 18, 1914] (Ws).